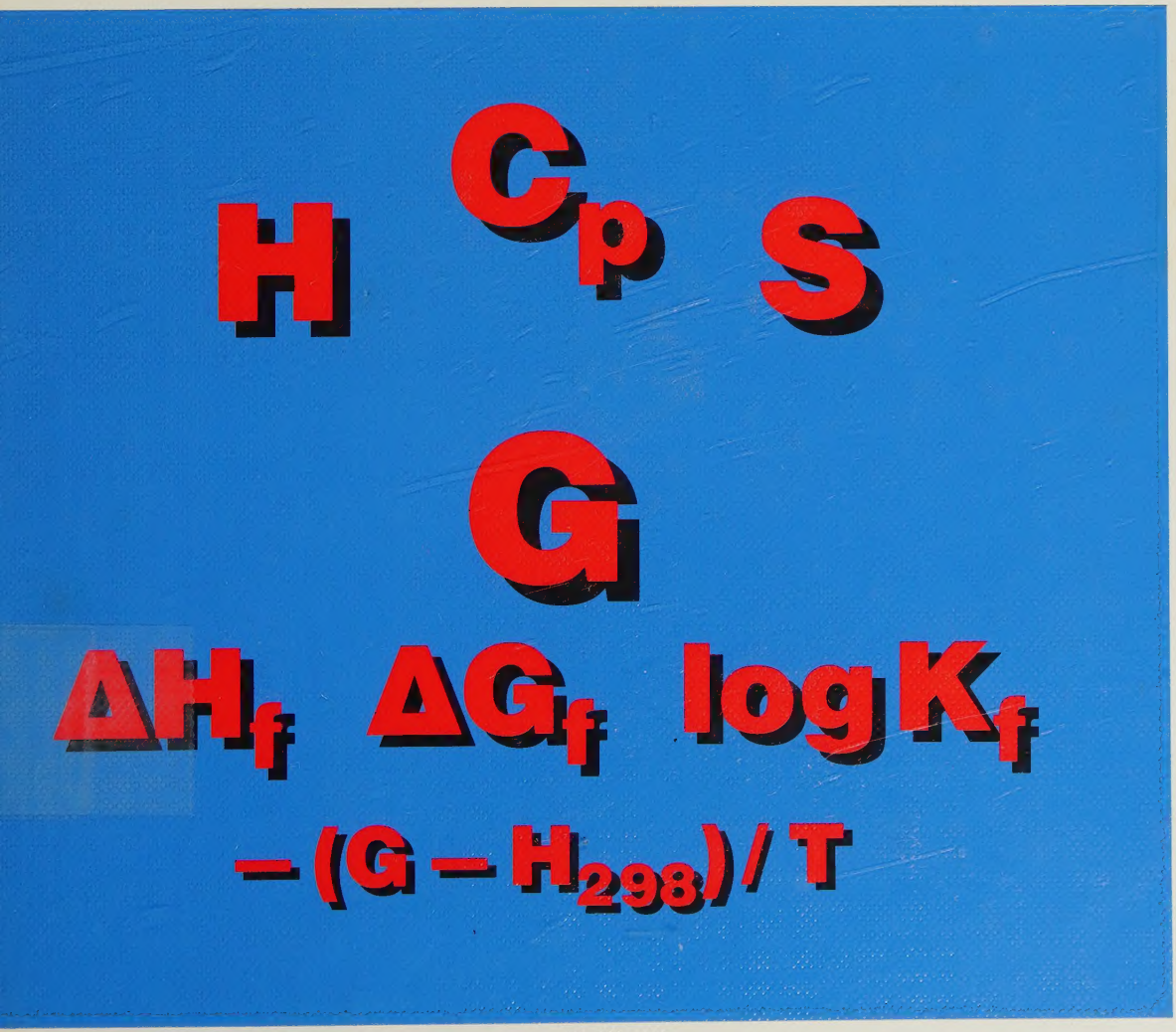
Ihsan Barin

Thermochemical Data of Pure Substances

Part I



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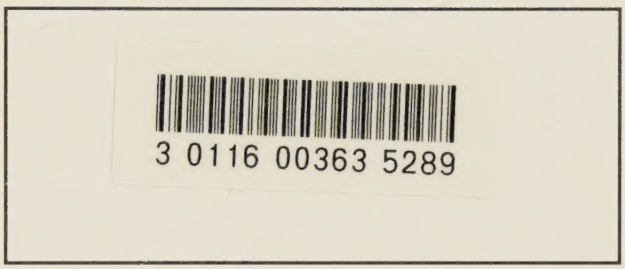

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Ihsan Barin

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Thermochemical Data of Pure Substances

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Foreword

Metallurgical, materials, ceramic and chemical engineers worldwide will welcome this new compilation of thermochemical data by Professor Barin. Here they will find the most comprehensive tables yet available for the thermodynamic properties of pure substances as a function of temperature at 100° intervals. Almost twenty-four hundred substances are included – the elements, and compounds of two, three, and four elements. The vast majority of substances are inorganic, but Dr. Barin has included a generous selection of the more common hydrocarbons, carbohydrates, and a few chlorinated hydrocarbons. The format of the tables conforms to that of the JANAF tables, and SI units are employed. To better appreciate the value of Dr. Barin's work, I have compared it below with other compilations that I regularly use.

JANAF Tables. These tables are critically evaluated, each table is accompanied by a text that describes the data considered and reasons for the choice between conflicting values. The effort is directed at substances of importance to the sponsors of the project (U.S. Air Force and Department of Energy). As a result the stress is on substances of importance to fuel combustion, jet and rocket propulsion, and air pollution. Many elements and compounds of importance to metallurgy and related fields have not yet been included. For example, there are no tables for the elements and compounds of Ag, As, Au, Bi, Cd, Ce, In, Ir, La, Pd, Pt, Se, Sn, Te, Y, and U; moreover, many compounds essential to metallurgical calculations, such as Cu_2S, NiO, $NiSO_4$, $PbSO_4$, ZnO and ZnS have yet to be included.

U.S. Bureau of Mines Bull. 672, 674, and 677. Bulletins 672 and 674 cover the elements, binary oxides and binary halides in a very complete fashion. Bulletin 677, summarizes the values from Bulletins 672 and 674, and adds a modest selection of tables for arsenides, antimonides, borides, carbides, carbonates, hydrides, nitrides, phosphides, selenides, silicates, silicides, sulfates, sulfides and tellurides. The coverage of these added compound types, however, is far from complete; for example, there are no tables for $PbSO_4$, $SnSO_4$, GaS and Li_2S. The only ternary compounds included are the carbonates, sulfates and silicates, and no quaternary compounds are listed except for a limited number of hydrated compounds. Only brief references are given to the data sources, without attempt to explain the choice between conflicting values.

The Barin tables are far more complete in coverage than any of the sources described above. All of the natural elements and their compounds are included. In addition to the substance types listed in USBM Bull 677, the Barin tables include a large number of ternary oxides – aluminates, arsenates, borates, chromates, molybdates, nitrates, oxy-halides, phosphates, titanates, tungstates, selenates, vanadates, zirconates, etc. – as well as cyanides, hydroxides, complex silicates and inter-metallic compounds. The only substances not included by Barin, for which tables can be found elsewhere, are the ionized-gas species and a limited number of gas species important only at very high temperatures, which are listed in the JANAF Tables. For each table Dr. Barin gives references for each of the major thermochemical values employed (enthalpy of formation and entropy at 298 K, and heat capacity). Like the USBM Bulletins, no attempt is made to discuss the choice between conflicting data sources.

Regarding quality of the values listed, Dr. Barin has wisely relied heavily on critically evaluated data (CODATA and JANAF) in cases where such values are available. For other substances he has drawn on a wide variety of sources, including the USBM Bulletins, other compilations, the periodical literature, and his own estimation of some thermochemical data. As new measurements are made, and as new critical evaluations become available, many of the Barin tables will require revision, but this is a characteristic of any attempt to compile thermochemical data. Anyone making thermochemical calculations who insists on the best possible data, will use a compilation, such as that of Barin or JANAF, as a starting place, but he will then check the recent periodical literature for new measurements that may have rendered the compiled values obsolete. This in no way detracts from the value of the compilation by Dr. Barin, which offers a starting place that is far more comprehensive than others, particularly for those concerned with metallurgical and similar systems.

The accomplishment of Dr. Barin in producing this volume is more remarkable in that it is largely an individual effort. The writer appreciates, from his own modest efforts to accumulate thermochemical data, the magnitude of the effort represented by this work.

Herbert H. Kellogg
Columbia University
New York, N.Y., 10027
February, 1989

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Preface

Thermodynamic calculations are often used for the analysis and description of the changes of state associated with the transfer of matter and energy. These calculations are an indispensable part of today's technical and scientific investigations in various fields such as chemistry, metallurgy, chemical engineering, energy technology, environmental technology, etc. The recent improvement in computer capabilities did enhance the application of thermochemical calculations in the development of new processes as well as for the improvement of existing techniques.

The reliability of the results of thermochemical calculations depends, in the first instance, on the accuracy of the thermochemical data used. On the other hand, the practical relevancy of the results is determined by the comprehensiveness of inclusion of the various species which are often quite numerous in real systems.

In this sense this present work may contribute to the application of thermochemical calculations to a wide variety of substances. The values of the thermochemical functions of 2372 pure substances [including 91 elements and the electron e^- (gas)] are tabulated at temperature intervals of 100 K. The substances include about 100 organic compounds. The data of gaseous species are always tabulated separately.

Complete sets of basic data needed for the calculation of thermochemical functions are available only for a relatively small number of substances. Very often the data have to be completed by analysing values from different sources as well as by appropriate estimations before they can be used for calculations and they may well then be less accurate. Such estimates have been made especially for S (298.15) and $C_p(T)$.

The layout of the tables and the functions quoted correspond to conventions which are also used in standard works such as the JANAF Tables and the Tables of the U.S. Bureau of Mines. The following thermochemical functions are tabulated: heat capacity C_p, entropy S, Gibbs energy function $Gef = -[G-H(298.15)]/T$, enthalpy H, enthalpy increment $H-H(298.15)$, Gibbs energy $G = H-TS$, and the formation quantities ΔH_f, ΔG_f and $\log K_f$. The formation reactions refer to the reference states of the elements, which are given in a separate table.

A preliminary text serves to introduce the subject of thermodynamics and includes a short description of the fundamental relations of chemical thermodynamics. The calculation of thermochemical functions is elucidated on the basis of these relations. This is followed by a description of the contents and structure of the tables. A relatively large amount of space is devoted to the examples in order to demonstrate the use of tables to those who are not well acquainted with thermodynamic calculations.

The data listed in the tables in Part VII also form the database for EQUITHERM, a software system authored by I. Barin, G. Eriksson, F. Sauert, M. Zeitler, B. Wittig, and W. Schmidt, which is available from the publishers of the book. EQUITHERM can be used to carry out thermodynamic calculations on multi-component, multi-phase systems made up of any of the substances listed in this work. Thus, the publishers are in the unique position of being able to offer both a printed compilation of thermodynamic data for pure substances and a software package for the calculation of equilibria in multi-species systems.

Cologne/Aachen, Summer 1988 I. Barin

Acknowledgment

The present work is the result of an individual effort without any support from public authorities. The facilities of KHD Humboldt Wedag AG, Cologne, were used in the compilation of the tables. The support of the management of the company and staff of the research and development center is gratefully acknowledged. The input of data was carried out over a long period by Ms Wang Shu Sheng outside the working hours. Dipl. Ing. F. Sauert and Dr. E. Schultze-Rhonhof provided computer methods and aided in the examination of the consistency of selected data.

Kind encouragement was provided during the course of the work by Dr. N. A. Gokcen, US Bureau of Mines, Albany, Oregon, and Dr. N. Themelis, Columbia University, New York, N.Y., and by many other colleagues and friends.

VCH Verlagsgesellschaft, Weinheim, has supported the work in all its phases.

Dr. F. and Mrs J. A. Hampson, Saarbrücken, are acknowledged for the translation of the introductory text.

I particularly wish to thank my family for their patience, help, and understanding while I was preparing this book.

I. Barin

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Part I
Basic Principles

1 Thermodynamic functions and relations

This section summarizes the laws of thermodynamics and the relations that are derived from them. The main object is to form a fundamental basis for the exact description of the tabulated thermochemical data and their practical application for users who are not specialized in thermodynamics.

The equations included in this brief summary are only intended to provide the elementary tools for chemical thermodynamic calculations. If further information or explanation is required one of the numerous textbooks and standard works, which treat the fundamentals of chemical thermodynamics in detail, should be consulted. Some such textbooks are listed at the end of this chapter.

1.1 State functions

In thermodynamics the properties of a system are represented by state functions which are themselves described using appropriate variables of state. The following state functions are employed in chemical thermodynamics

- p pressure
- T absolute temperature (thermodynamic temperature)
- V volume
- U internal energy
- H enthalpy $= U + pV$
- S entropy
- A Helmholtz energy (free energy) $= U - TS$
- G Gibbs energy (free enthalpy) $= H - TS$.

V, U, H, S, A, and G are extensive properties, i.e., they depend on the amount of material present in the system. p and T as well as all molar quantities are intensive quantities.

The state functions are properties of the present state of the system and do not depend on the path by which that state was reached. The differential of a state function is an exact differential; its integral between the initial and the final state is independent of the path taken.

1.1.1 The Zeroth Law of thermodynamics

Empirical temperature

All systems in thermal equilibrium with a reference system are also in thermal equilibrium with each other. All systems in mutual thermal equilibrium with each other have the same temperature Θ. This implies that the equality of temperature is the necessary condition for thermal equilibrium between two systems or two parts of a system. The thermodynamic temperature T is an intensive property of a system independent of its mass; it is defined by the Second Law and related to the empirical temperature Θ. When $T = \Theta$ it is referred to as the Kelvin temperature. The temperature T is a state function and its value is defined on the basis of the ideal gas temperature scale.

Celsius temperature:
$t_C[°C] = T[K] - 273.15$

Fahrenheit temperature:
$t_F[F] = 9/5\ t_C[°C] + 32$

Ice point:
$0°C = 273.15\,K$

1.1.2 Equations of state

The following equations of state apply to a homogeneous system (comprising a single phase)

$$V = V(p,T,n),$$

$$p = p(V,T,n)$$

where V is the volume, p the pressure, T the temperature and n the amount of substance (e.g. in moles). For each given set of values for T, p and n, V has a corresponding value.

V and p are state functions. For a homogeneous system of fixed n

$$dV = (\partial V/\partial p)_T dp + (\partial V/\partial T)_p dT$$

and, hence,

$$(\partial V/\partial T)_p = -(\partial V/\partial p)_T (\partial p/\partial T)_V.$$

Ideal (perfect) gas:

$$pV = nRT \text{ (ideal gas equation)}$$

R is the gas constant and n the amount of substance in moles.

Real (imperfect) gas:

$$p = RT/(V_m - b) - a/V_m^2$$

(van der Waals equation)

$$p = (RT/V_m)[1 + B(T)/V_m + C(T)/V_m^2 + \cdots]$$

(virial equation)

$V_m = V/n$ is the molar volume, a and b are the van der Waals constants and B, C, etc. are the virial coefficients.

1.2 The First Law of thermodynamics

1.2.1 Thermodynamic system

The macroscopic part of the universe being considered for thermodynamic purposes is known as *the system* (e.g. a chemical reactor containing substances). The part of the universe outside the system is termed *the surroundings*.

A *homogeneous system* (or phase) is one with the same physical and chemical properties in every part of it. A *heterogeneous system* is made up of several phases.

An *open system* can exchange mass and heat with its surroundings; an open system can also do work and have work done on it.

A *closed system* cannot exchange mass with its surroundings. Heat exchange and work are possible.

An *isolated system* can exchange neither mass nor heat and it is impossible for the system to do work or have work done on it.

A *thermally isolated system* is a special case of the closed system, where no transfer of mass or heat can take place but the performance of work is allowed. A process taking place in a thermally isolated system is referred to as an *adiabatic process*.

1.2.2 Formulation of the First Law

General principle: *The energy of an isolated system is constant.*

Energy, work, heat

The work done on a thermally isolated system is independent of the type of work and of the route by which this is carried out. In the case under consideration the transition from state 1 to state 2 is represented by

$$W_{ad} = E_2 - E_1 = \Delta E$$

where W_{ad} is the (adiabatic) work carried out and E the energy of the system. In an adiabatic process the work done on or by the system corresponds to the change in the energy of the system from state 1 to state 2. The value of ΔE is independent of the path. E is a state function.

$W_{ad} > 0$ work is done on the system, $\Delta E > 0$
$W_{ad} < 0$ work is done by the system, $\Delta E < 0$.

For an *isolated system*,

$$W_{ad} = 0 \text{ and } \Delta E = 0, \text{ i.e. } E = \text{constant.}$$

For a *closed system*,

$$\Delta E = Q + W$$

$Q > 0$ system receives heat,
$Q < 0$ system loses heat.

For an infinitesimal change of state:

$$dE = dQ + dW$$

where dW and dQ are inexact differentials, in contrast to dE, and ought strictly to have been characterized as such in the way they are written.

The work W can be carried out in different ways. Mechanical work associated with a change in volume is defined as

$$dW = -p\,dV$$

where p is the external pressure exerted on the system.

$dW < 0$ work is done by the system,

$dW > 0$ work is done on the system.

Electrical work done on the system:

$$dW_{el} = Q_{el}\,d\varphi$$

where Q_{el} is the electrical charge and $d\varphi$ the change in electrical potential.

1.2.3 Internal energy

The total energy of a system is made up of its kinetic energy E_{kin}, its potential energy E_{pot} and its internal energy U:

$$E = E_{kin} + E_{pot} + U.$$

The law of conservation of energy for an isolated system is described by

$$E_{kin} + E_{pot} + U = \text{const. (isolated system).}$$

At constant macroscopic velocities and constant positional coordinates (which are always assumed in what follows) the following apply to internal changes of state:

$\Delta U = W$ adiabatic process

$\Delta U = 0$ isolated system

$\Delta U = Q + W$ closed system.

In the case of an infinitesimal change of state in a closed homogeneous system whereby the only work done is associated with the change in volume, the following relation applies:

$$dU = dQ - p\,dV.$$

U, like E, is a state function and is described by

$$U = U(V,T),$$

$$dU = (\partial U/\partial V)_T dV + (\partial U/\partial T)_V dT.$$

1.2.4 Enthalpy

The enthalpy of a system at constant pressure is defined by

$$H = U + pV.$$

After differentiation and substitution of $dU = dQ - p\,dV$ this gives, for a closed homogeneous system,

$$dH = dQ + V\,dp$$

$$\Delta H = Q \text{ at constant } p.$$

In the case of isobaric processes (p = constant) in closed systems the heat exchanged with the surroundings is equal to the change in enthalpy of the system. For this reason the enthalpy is an important state function in applied thermodynamics. The application of the energy law to stationary flow processes often involves setting up enthalpy balance relations.

Like U, H is a state function and for a closed homogeneous system described by

$$H = H(p,T),$$

$$dH = (\partial H/\partial p)_T dp + (\partial H/\partial T)_p dT.$$

1.2.5 Heat capacities

For closed systems of constant composition the heat capacities C_V and C_p are defined as follows:

$$C_V = (\partial U/\partial T)_V = |dQ/dT|_V,$$

$$C_p = (\partial H/\partial T)_p = |dQ/dT|_p.$$

The total differentials of U and H can then be expressed by

$$dU = C_V dT + (\partial U/\partial V)_T dV$$

$$dH = C_p dT + (\partial H/\partial p)_T dp.$$

Relations for $C_p - C_V$:

The equations for definition of C_V and C_p imply that the difference $C_p - C_V$ in the case of an ideal gas corresponds to the work needed for expansion of the system on heating at constant pressure.

From the equations given above follows

$$C_p - C_V = (\partial H/\partial T)_p - (\partial U/\partial T)_V.$$

Insertion of $H = U + pV$ gives

$$C_p - C_V = (\partial U/\partial T)_p - (\partial U/\partial T)_V + (\partial(pV)/\partial T)_p.$$

Calculations using the relations for partial derivatives yield

$$(\partial U/\partial T)_p - (\partial U/\partial T)_V = (\partial U/\partial V)_T (\partial V/\partial T)_p,$$

$$(\partial(pV)/\partial T)_p = p(\partial V/\partial T)_p.$$

Insertion of these equations into the last equation for $C_p - C_V$ gives

$$C_p - C_V = [(\partial U/\partial V)_T + p](\partial V/\partial T)_p.$$

Transformations using Maxwell relations (see Section 1.6.4) and relations for partial derivatives lead to

$$(\partial U/\partial V)_T = T(\partial p/\partial T)_V - p.$$

Inserting this expression into the last equation with use of partial derivatives gives

$$C_p - C_V = TV\alpha^2/\kappa$$

where α and κ are defined by

$$\alpha = \frac{1}{V}(\partial V/\partial T)_p \quad [K^{-1}]$$

(isobaric thermal expansivity),

$$\kappa = -\frac{1}{V}(\partial V/\partial p)_T \quad [Pa^{-1}]$$

(isothermal compressibility).

For **ideal gases**,

$$\alpha = 1/T$$

$$\kappa = 1/P$$

$$C_p - C_V = R.$$

For **condensed phases** the difference between C_p and C_V is determined by the constants α and κ and, thus, varies from substance to substance.

Example: AgCl (solid)

$C_p = 52.886\ J\ K^{-1}\ mol^{-1}$ at $T = 298.15$ K (see Tables).

The following values for α, κ and ϱ (density) are reported in "D'ans. Lax" (E. Lax: Taschenbuch für Chemiker und Physiker Vol.1, Springer-Verlag, Berlin, 1967):

$$\alpha = 10.3 \times 10^{-5}\ K^{-1}$$

$$\kappa \approx 2.4 \times 10^{-6}\ bar^{-1} = 2.4 \times 10^{-11}\ Pa^{-1}$$

$$M = 143.321\ g/mol,\ \varrho = 5.56\ g/cm^3$$

$$V = 143.321/5.56 = 25.777\ cm^3\ mol^{-1} = 25.777 \times 10^{-6}\ m^3\ mol^{-1}$$

so that

$$C_p - C_V = 3.4\ J\ K^{-1}\ mol^{-1}.$$

This difference amounts to 6.4% of C_p.

1.2.6 Temperature dependence of *U* and *H*

The following expressions are obtained by substituting C_V and C_p in the total differentials of U and H for closed homogeneous systems:

$$dU = C_V dT + (\partial U/\partial V)_T dV$$

$$dH = C_p dT + (\partial H/\partial p)_T dp.$$

When Maxwell equations (see Section 1.6.4) are employed, the following relations can be derived:

$$(\partial U/\partial V)_T = -p + T(\partial p/\partial T)_V$$

$$(\partial H/\partial p)_T = V - T(\partial V/\partial T)_p.$$

The dependence of U and H on V and p at constant temperature can therefore be expressed in terms of directly determinable quantities. The following expressions are obtained for the temperature dependence of U and H after inserting α and κ (see Section 1.2.5):

$$dU = C_V dT + [-p + T\alpha/\kappa]dV$$

$$dH = C_p dT + [V(1 - T\alpha)]dp.$$

For **ideal gases**,

$$dU = C_V dT$$

$$dH = C_p dT.$$

The terms $[-p + T\alpha/\kappa]$ and $[V(1 - T\alpha)]$ have to be taken into account in the case of **condensed phases**. In many cases the quantity $[V(1 - T\alpha)]$ is negligibly small with respect to the enthalpy changes occurring with temperature and, in particular, with respect to enthalpies of reactions or phase transitions.

Example: iron at 298.15 K; $\alpha = 11.7 \times 10^{-6}\ K^{-1}$ and $V = M_{Fe}/\varrho_{Fe} = 7.1\ cm^3\ mol^{-1} = 7.1 \times 10^{-6}\ m^3\ mol^{-1}$ (α and $\varrho_{Fe} = 7.87\ g\ cm^{-3}$ from Landoldt-Börnstein, 4331/p.132).

If the pressure is increased by 100 bar $= 10^7$ Pa then

$$[V(1 - T\alpha)]\Delta p = [7.1 \times 10^{-6}(1 - 298.15 \times 11.7 \times 10^{-6})]10^7 = 70.8\ J\ mol^{-1}.$$

The enthalpy change involved in increasing the temperature from 298.15 K to 300 K (i.e. by 1.85 K) amounts to 46 J mol^{-1}.

In general the **enthalpy changes occurring in condensed phases** at moderate pressures can be adequately described by the relation

$$dH = C_p dT.$$

For reactions among solid substances

$$dU \approx dH.$$

1.3 Joule-Thomson (Kelvin) effect

The Joule-Thomson experiment demonstrated that on adiabatic expansion, without performing external work, the enthalpy of a gas (ideal or real) remains constant. From this it follows that the internal energy U of an ideal gas is independent of the volume and is, thus, determined by the temperature alone.

For an isenthalpic process in a closed homogeneous system

$$dH = (\partial H/\partial P)_T dP + (\partial H/\partial T)_p dT = 0$$

so that

$$\mu_{JT} = (\partial T/\partial p)_H = -(\partial H/\partial P)_T/C_p.$$

μ_{JT} is the Joule-Thomson coefficient. From this it follows that

$$(\partial H/\partial p)_T = -\mu_{JT} C_p$$

$$(\partial H/\partial T)_V = (1 - \alpha\mu_{JT}/\kappa) C_p.$$

For an **ideal gas**,

$$\mu_{JT} = 0$$

$$H(T, p_1) = H(T, p_2).$$

For a **real gas**,

$$\mu_{JT} = [2a/RT - b]/C_p$$

where a and b are the Van der Waals constants.

The value of μ_{JT} has the following consequences in the $T - p$ diagram:

$\mu_{JT} > 0$ region of cooling, the gas is cooled as it expands (e.g. N_2, O_2 at 298.15 K)

$\mu_{JT} < 0$ area of warming, the gas becomes heated on expansion (e.g. He, H_2 at 298.15 K)

$\mu_{JT} = 0$ boundary curve at $T = T_I$.

T_I is the inversion temperature. For a van der Waals gas

$$T_I = 2a/Rb = 2T_B$$

where T_B is the Boyle temperature.

For CO_2 at $T = 298.15$ K and $p = 1$ bar

$$\mu_{JT} = 1.1 \text{ K bar}^{-1}.$$

This means that the temperature of CO_2 decreases by 1.1 K as a result of a pressure decrease of 1 bar.

In thermochemistry, gases are frequently regarded as ideal gases. That is, no account is taken of the change in enthalpy with pressure. It is possible to check the validity of this simplification for a given gas on the basis of the relation

$$(\partial H/\partial p)_T = -\mu_{JT} C_p.$$

1.4 The Second Law of thermodynamics

1.4.1 Entropy

The Second Law, like the First, is axiomatic and expressed by the following general principle (Atkins): *"No process is possible in which the sole result is the absorption of heat from a reservoir and its complete conversion into work".*

The First Law leads to the definition of the internal energy (U). The Second Law introduces the entropy (S) and the temperature (T) as state variables and, furthermore, determines the direction of natural processes.

With reference to Sommerfeld and Haase (see Section 1.13) the implications of the Second Law can be summarized as follows:

- Every thermodynamic system possesses an extensive property called entropy (S). The change in entropy of a system is determined by bringing the system from an arbitrary initial state to a defined final state, whereby the system passes through a series of equilibrium states. At each step the quantity of heat dQ is added to the system. Division of dQ by the absolute temperature T (which remains to be defined), and summation of the quotients dQ/T over all the steps, yields the change in entropy of the system for the change of state in question.

  For a reversible cyclic process:

  $$\oint dQ_{rev}/T = 0$$

  and hence

  $$dQ_{rev}/T = dS.$$

- Entropy is a state function.
- The entropy of a closed system can only increase in a natural (real) change of state.
- The increase in the entropy of a system for any change of state can be divided into two parts:

  $$\Delta S = \Delta S_e + \Delta S_i.$$

  The first term corresponds to the entropy change occurring in the system as a result of heat exchange with its surroundings. The second term represents the entropy changes resulting from the process taking place within the system.

The following general relations apply to entropy changes in closed systems:

$\Delta S_e = 0$ adiabatic process

$\Delta S_i = 0$ reversible process

$\Delta S_i > 0$ irreversible process

$\Delta S > \Delta S_e$ irreversible process

$\Delta S = \Delta S_e$ reversible process

$\Delta S = 0$ reversible, adiabatic process

$\Delta S > 0$ irreversible, adiabatic process.

1.4.2 Entropy changes, thermodynamic temperature

For the entropy change in a closed system in thermal equilibrium with a reference system the following simplified relation applies:

$$dS_{sys} \geq dQ_{sys}/T_{sys} \quad \textbf{(Clausius inequality)}.$$

In general, the entropy change in a closed system at uniform temperature is defined by

$$\Delta S \geq \int_1^2 dQ/T.$$

Where dQ represents the infinitesimal quantity of heat introduced into the system and T the temperature of the system. Furthermore,

$\Delta S \geq Q/T$ isothermal process

$dS = dQ_{rev}/T$ isothermal, reversible process.

This, combined with the equation

$$dU = dQ - dW \text{ (First Law)}$$

produces

$$dU = TdS - pdV \text{ (fundamental equation)}.$$

From this equation follows

$$U = U(S, V),$$
$$dU = (\partial U/\partial S)_V\, dS + (\partial U/\partial V)_S\, dV.$$

Comparison of this equation with the fundamental equation leads to definition of the **thermodynamic temperature** T:

$$(\partial U/\partial S)_V = T.$$

Combination of relations from the First and Second Laws gives, in addition,

$$dS = (dU + pdV)/T$$
$$dS = (dH - Vdp)/T.$$

Thus leading to the following relations:

$$(dS)_{U,V} \geq 0, \quad (dU)_{S,V} \leq 0$$

$$(dS)_{H,p} \geq 0, \quad (dH)_{S,p} \leq 0.$$

1.4.3 Temperature dependence of entropy

The entropy of a closed homogeneous system is described by

$$S = S(T,V),$$

$$S = S(T,p)$$

so

$$dS = (\partial S/\partial T)_V dT + (\partial S/\partial V)_T dV$$
$$= (dU + pdV)/T,$$
$$dS = (\partial S/\partial T)_p dT + (\partial S/\partial p)_T dp$$
$$= (dH - Vdp)/T.$$

Together with the equations from Section 1.2.6

$$dU = C_V dT + [-p + T\alpha/\kappa]\, dV \text{ and}$$

$$dH = C_p dT + [V(1 - T\alpha)]\, dp$$

they yield

$$dS = (C_V/T)dT + (\alpha/\kappa)dV,$$

$$dS = (C_p/T)dT - V\alpha dp.$$

For **ideal gases** these equations become

$$dS = (C_V/T)dT + RdV/V$$

$$dS = (C_p/T)dT - Rdp/p.$$

The entropy of an ideal gas increases on expansion at constant temperature. If the pressure of an ideal gas is reduced in this way from 1 atm to 1 bar then the entropy of the gas is increased by 0.109442 J K^{-1} mol^{-1}.

For **pure condensed phases** the change in entropy as a result of pressure changes is often negligible in comparison with the entropy changes resulting from changes in temperature and from chemical reactions or phase changes. So that here the following equation applies:

$$dS = (C_p/T)dT$$

if the pressure change is not too high.

For iron at 298.15 K (see example in Section 1.2.6) the entropy change resulting from the change in $\alpha V dp$ on raising the pressure from 1 to 101 bar is given by

$$V\alpha\Delta p = 7.1 \times 10^{-6} \times 11.7 \times 10^{-6} \times 10^7$$
$$= 8.3 \times 10^{-4} \text{ J K}^{-1} \text{ mol}^{-1}.$$

1.5 The Third Law of thermodynamics

General formulation: *It is impossible to reach absolute zero ($T = 0$ K) in a finite number of steps.*

Nernst heat theorem: The entropy change accompanying a transformation between pure crystalline solids in equilibrium approaches zero as the temperature approaches absolute zero.

Planck's postulate: The entropy of ideal crystals of pure solid substances approaches zero as the temperature approaches zero.

A more general formulation of the Third Law is that of **Lewis and Randall** (as quoted by Atkins): If the entropy of every element in its stable state at $T = 0$ is taken as zero, every substance has a positive entropy, which at $T = 0$ may become zero, and does become zero for all ideal crystalline substances, including compounds.

When

$$S(T = 0) = 0$$

then, in general,

$$S(T) = \int_0^T (C_p/T)dT \quad \text{at constant } p.$$

The entropy values based on the condition

$$S(T = 0) = 0$$

are known as "Third Law entropies" or "absolute entropies".

*Comments on residual entropy**

For most pure crystalline substances it is possible to determine the entropy on the basis of the

*) Carl Wagner, private communication, 1977

Third Law ($S(T = 0) = 0$) from calorimetric data alone, i.e. $C_p(T)$ and heats of transitions.

In the case of many gases (H_2, O_2, N_2...) the entropy is not determined from calorimetric data but calculated from the equations of statistical mechanics. The Boltzmann equation for the relation between entropy and thermodynamic probability is the basis for this:

$$\Delta S(\mathrm{I} \rightarrow \mathrm{II}) = \int_{\mathrm{I}}^{\mathrm{II}} \mathrm{d}Q_{\mathrm{rev}}/T = k \ln [\Omega(\mathrm{II})/\Omega(\mathrm{I})].$$

Where k is Boltzmann constant and Ω the weight of configuration (thermodynamic probability). Ω is defined as the number of microstates forming a macrostate. With

$$S(\mathrm{II}) - S(\mathrm{I}) = k \ln \Omega(\mathrm{II}) - k \ln \Omega(\mathrm{I})$$

it is possible to set the following condition:

$$S = 0 \quad \text{if } \Omega = 1$$

and hence

$$S = k \ln \Omega.$$

This procedure would be rational but it is not normally employed. The following convention is used instead:

$$S = k \ln \Omega \text{ (conventional)} = k \ln \Omega_{\mathrm{C}}.$$

Ω_{C} does not take into account those microstates resulting from differing orientations of atomic nuclei and through the exchange of isotopes of atomic nuclei. The numbers of such microstates do not change in chemical reactions. It is, therefore, justifiable to ignore them in thermochemical calculations.

In the case of **ideal gases** it is possible to calculate Ω_{C} for particular values of p and T from spectroscopic data using the formulae of statistical mechanics.

The calculation of Ω_{C} is more difficult for **crystals**. So the entropy is calculated from

$$S(T) = k \ln \Omega_{\mathrm{C}}(T = 0) + \int_{0}^{T} (C_p/T)\,\mathrm{d}T.$$

For **perfect crystals**:

$$\Omega_{\mathrm{C}}(T = 0) = 1, \text{ i.e. } S(T = 0) = 0.$$

However, amorphous phases (glasses) and crystalline mixtures possess a finite residual entropy. In the case of substances such as H_2 and CO too, it holds that $S(T = 0) > 0$.

1.6 Fundamental relations of thermodynamics

1.6.1 Helmholtz energy, Gibbs energy

Helmholtz energy: $A = U - TS$

Gibbs energy: $G = H - TS$

On changes of state in a closed system, after substitution of the relations from the First and Second Laws, this yields:

$$(\mathrm{d}A)_{T,V} \leq 0$$

$$(\mathrm{d}G)_{T,p} \leq 0.$$

It follows from this that A and G in closed systems must decrease in a natural process and reach a minimum at equilibrium. For reversible changes of state at constant temperature

$$\mathrm{d}A = \mathrm{d}U - S\mathrm{d}T, \quad T = \text{const.}$$

$$\mathrm{d}G = \mathrm{d}H - S\mathrm{d}T, \quad T = \text{const.}$$

In the case of a closed system only performing work by change of volume

$$\mathrm{d}A = -p\mathrm{d}V - S\mathrm{d}T$$

$$\mathrm{d}G = V\mathrm{d}p - S\mathrm{d}T.$$

The functions A and G combine together the statements of the First and Second Laws and are of fundamental importance.

The changes of A and G in closed systems correspond to the maximum work performed by or on the system. $\mathrm{d}A$ is identical to the work carried out during an isothermal reversible change. $\mathrm{d}G$ is identical to the non $-p, V$ work carried out under isothermal, isobaric, reversible conditions. In other words $-\mathrm{d}G$ corresponds to the maximum non $-p, V$ work (e.g. electrical work) that can be done by a closed system at constant p and T.

The main function of interest in chemical thermodynamics is $G(p, T)$ since p and T can be specified in most technical processes. Most chemical processes take place at constant pressure and not at constant volume.

It should be noted that the definition

$$G = H - TS$$

applies to the Gibbs energy of a homogeneous system at uniform temperature. If a system consists of different phases φ existing at different

temperatures T_φ the enthalpy H, entropy S and Gibbs energy G of the total system are given by

$$H = \sum_\varphi H_\varphi$$

$$S = \sum_\varphi S_\varphi$$

$$G = H - \sum_\varphi (TS)_\varphi$$

if the temperature is uniform throughout the whole system, i.e. if $T = T_\varphi$, then

$$G = H - TS.$$

1.6.2 Temperature and pressure dependence of Gibbs energy

For a closed system consisting of only one phase of a pure substance, G is described by

$$dG = (\partial G/\partial p)_T dp + (\partial G/\partial T)_p dT$$

with

$$dG = V dP - S dT,$$

it follows for the temperature and pressure dependence of G that

$$(\partial G/\partial T)_p = -S = (G - H)/T$$

$$(\partial (G/T)/\partial T)_p = -H/T^2$$

(**Gibbs-Helmholtz equation**)

$$(\partial G/\partial p)_T = V.$$

The temperature dependences of H and S have been described in Sections 1.2.6 and 1.4.3; $G(T)$ is given by

$$G(T) = H(T) - T\,S(T).$$

From the pressure dependence of G it follows that
in the case of an **ideal gas** consisting of n moles

$$dG = nRT\,dp/p, \quad T = \text{const.}$$

and in the case of **pure condensed phases**

$$dG = V dp, \quad T = \text{const.}$$

The change in the Gibbs energy of pure condensed phases as a result of changes in pressure is often negligible in comparison with that resulting from changes in temperature and from chemical reactions.
In the case of iron at 298.15 K the change in Gibbs energy on increasing the pressure from 1 to 101 bar is

$$\Delta G = V\Delta p = 7.1 \times 10^{-6} \times 10^7 = 71 \text{ J mol}^{-1}.$$

This is much less than the change in G resulting from a temperature increase of 5 K.

Hence, in many cases involving condensed phases, it can be taken that

$$(\partial G/\partial p)_T = 0.$$

However, this does not apply to geophysical processes where account has to be taken of the very high pressures involved. The equation $dG = V dp$ must be integrated in such cases.

The Gibbs energy of pure substances is reported for a standard state, i.e. at 1 bar; by definition such values ($G°$ values) are not dependent on pressure.

1.6.3 Natural changes and equilibrium state in a closed system

According to the Second Law and the Clausius inequality in particular (see Section 1.4.2) it follows for a closed system, which can exchange heat with its surroundings at constant temperature, that

$$dS - dQ/T \geq 0 \qquad (T = T_{sys})$$

$$dS - dU/T \geq 0 \qquad \text{const. } V,T$$

$$dS - dH/T \geq 0 \qquad \text{const. } p,T.$$

If the only work allowed is that occurring on volume change then

$$T dS \geq dU, \qquad \text{const. } V$$

$$T dS \geq dH, \qquad \text{const. } p$$

$$(dS)_{U,V} \geq 0 \qquad (dS)_{H,p} \geq 0$$

$$(dU)_{S,V} \leq 0 \qquad (dH)_{S,p} \leq 0$$

$$(dA)_{T,V} \leq 0 \qquad (dG)_{T,p} \leq 0.$$

These relations express the **direction of natural changes** of closed systems in terms of inequalities. The **equilibrium state** is characterized by the corresponding equality.

In the state of equilibrium the entropy of the system reaches a maximum

$$S(U,V) \rightarrow \text{maximum}$$

and the Gibbs energy a minimum

$$G(T,p) \rightarrow \text{minimum}.$$

1.6.4 Characteristic functions

Summarizing the characteristic (extensive energetic) functions of state and their differentials for a closed homogeneous system of constant com-

position involving only p,V work, yields the following list:

$U(S,V)$	
$dU = dQ_{rev} - pdV$	$dU = TdS - pdV$
$H(S,p)$	$dH = TdS + Vdp$
$A(T,V)$	$dA = -SdT - pdV$
$G(T,p)$	$dG = -SdT + Vdp.$

The following **Maxwell equations** are derived from these

$$(\partial T/\partial V)_S = -(\partial p/\partial S)_V$$
$$(\partial T/\partial p)_S = (\partial V/\partial S)_p$$
$$(\partial p/\partial T)_V = (\partial S/\partial V)_T$$
$$(\partial V/\partial T)_p = -(\partial S/\partial p)_T.$$

These relations allow the representation of the change of some properties as functions of readily determinable quantities. Use is made of this in deriving the temperature dependence of U and H (see Section 1.2.6). $(\partial U/\partial V)_T$ is found to be $[-p + T(\partial p/\partial T)_V]$ with the aid of Maxwell's 3rd equation.

1.7 Closed system with reactions

1.7.1 Reaction equation and conventions

In a closed system (e.g. made up of two different phases of a pure substance or of an ideal mixture of several components) the reactions that take place can be represented by

$$\nu_{R1}R_1 + \nu_{R2}R_2 + \ldots \rightarrow \nu_{P1}P_1 + \nu_{P2}P_2 + \ldots.$$

where ν_i is the stoichiometric coefficient of i and R_i and P_i denote the reactants and products respectively.

According to convention

$\nu_i < 0$ for reactants

$\nu_i > 0$ for products

$\Sigma\nu_i$ being the change in moles on reaction.

The relations between n_i and ν_i are

$$n_i/n_j = \nu_i/\nu_j$$
$$dn_i/\nu_i = dn_j/\nu_j = d\xi$$

whereby ξ is the extent (degree of advancement) of a chemical reaction. $d\xi = 1$ corresponds to a complete reaction where ν_i moles of i have reacted.

$$(\partial H/\partial \xi)_{T,p} = |dQ/d\xi|_{T,p},$$

therefore, corresponds to the heat exchanged with the surroundings for a complete reaction at constant temperature and constant pressure. In a phase change it is known as the "enthalpy of transition" and in a chemical reaction as the "enthalpy of reaction".

With

$$\partial/\partial\xi = \Delta$$

the following definition applies to the change in the quantity Z during a reaction

$$\Delta Z = \Sigma\nu_i Z_i$$

1.7.2 Reaction quantities

Δn_r	$= \Sigma\nu_i$	change in total moles during reaction
ΔV_r	$= \Sigma\nu_i V_i$	reaction volume
ΔC_{Vr}	$= \Sigma\nu_i C_{Vi}$	reaction heat capacity at const. V
ΔC_{Pr}	$= \Sigma\nu_i C_{Pi}$	reaction heat capacity at const. P
ΔU_r	$= \Sigma\nu_i U_i$	energy of reaction
ΔH_r	$= \Sigma\nu_i H_i$	enthalpy of reaction
ΔH_r	< 0	exothermic reaction
ΔH_r	> 0	endothermic reaction
ΔS_r	$= \Sigma\nu_i S_i$	entropy of reaction
ΔA_r	$= \Sigma\nu_i A_i$	Helmholtz energy of reaction
ΔG_r	$= \Sigma\nu_i G_i$	Gibbs energy of reaction

Relations between ΔU_r and ΔH_r

With $H = U + pV$, then
$$\Delta H_r = \Delta U_r + p\Delta V_r.$$

For reactions between **ideal gases** where

$$p\Delta V = \Delta nRT \text{ and } \Delta n = \Sigma\nu_i$$

then
$$\Delta H_r = \Delta U_r + \Delta V_r RT.$$

In the case of reactions between **pure condensed phases** where $\Delta V_r \approx 0$ then

$$\Delta H_r \approx \Delta U_r.$$

When gaseous and condensed phases are both involved in a reaction, if the ideal gas equation is employed and the volume changes in the condensed phases are neglected, then

$$\Delta H_r = \Delta U_r + RT\Delta n_{gas}.$$

This equation is important for the calorimetric determination of enthalpy changes, since calorimeters are generally equipped with rigid walls and measurement therefore leads initially to changes in internal energy. Correction with the

above equation then allows ΔH to be calculated from the ΔU that is actually determined.

Relations for ΔG_r

From $G = H - TS$ it follows that for reactions

$$\Delta G_r(T) = \Delta H_r(T) - T\Delta S_r(T).$$

For reactions between substances which do not undergo phase transitions over a particular temperature range, ΔC_{pr} is usually small, so that the following approximation applies in such cases

$$\Delta G_r(T) \approx \Delta H_r(T_0) - T\Delta S_r(T_0)$$

(**Ulich's approximation**).

As reported before (Section 1.6.1), the maximum non $-p, V$ work that a reaction system can perform at constant p and T is given by $-\Delta G_r$.

1.7.3 Enthalpy and entropy of transition, Clausius-Clapeyron equation

Enthalpy of transition

For a change of state in a closed system made up of a pure substance, and without external work as a result of volume change

$$\Delta H_t = (\partial H/\partial \xi)_{p,Tt} = |dQ/d\xi|_{p,Tt}.$$

T_t is the transition temperature. As defined before, ΔH_t is the enthalpy difference between the final and initial states (phases).

Entropy of transition

With

$$\Delta S = Q_{rev}/T = \Delta H/T \quad \text{at constant } p$$

(see Section 1.4.2)

it follows that

$$\Delta S_t = (\partial S/\partial \xi)_{p,T} = \Delta H_t/T_t.$$

Gibbs energy of transition

$$\Delta G_t = \Delta H_t - T_t\Delta S_t = 0$$

corresponding to the equilibrium state at

$$T = T_t.$$

Clausius-Clapeyron equation

With

$$(\partial \Delta G_t/\partial p)_{Tt} = -\Delta S_t$$

then

$$(dT/dp) = (\Delta V_t/\Delta S_t) = (\Delta V_t/\Delta H_t)\, T_t$$

(Clausius-Clapeyron equation for first-order transition)

First order transition:

$$\Delta H_t = \Delta S_t T_t \neq 0,$$

$$dC_p/dT \to \pm\infty.$$

Second order transition:

$$\Delta H_t = 0, \quad \Delta S_t = 0,$$

C_p is discontinuous.

Lambda transition:

$$\Delta H_t = 0, \quad \Delta S_t = 0,$$

course of $C_p(T)$ in λ form

(see Fig. 2.1).

1.8 Chemical potential

1.8.1 Open systems

An open system exchanges both heat and matter with its surroundings. The Gibbs energy of the open homogeneous system is described by

$$G = G(T, p, n_1, n_2 \ldots)$$

where n_1, n_2... are the numbers of moles of the chemical components of the system.

The total differential of G yields

$$dG = (\partial G/\partial p)_{T,ni}\, dp + (\partial G/\partial T)_{p,ni}\, dT + \Sigma(\partial G/\partial n_i)_{p,T,nj\neq i}\, dn_i.$$

1.8.2 Definitions of the chemical potential, Gibbs fundamental equation

The chemical potential for an open homogeneous system is defined by

$$\mu_i = (\partial G/\partial n_i)_{p,T,ni\neq j}.$$

Thus the chemical potential corresponds to the change in Gibbs energy of a multicomponent system on the introduction of an infinitesimal amount of a component into the mixture at constant p, T and constant amounts of the other components.

For a pure single phase substance μ_i represents the molar Gibbs energy of the substance i.

Substitution of μ_i into the total differential of G produces the **Gibbs fundamental equation**

$$dG = Vdp - SdT + \Sigma\mu_i dn_i.$$

1.8.3 Standard state for chemical potential, definition of activity

The chemical potential is divided into a standard and a relative potential according to the following definition:

$$\mu_i = \mu_i^\circ + RT \ln a_i.$$

μ_i° is the standard chemical potential. This is the value of μ at a given temperature T and standard pressure p°. a_i is the activity of i and is defined by

$$a_i = p_i/p_i^\circ.$$

The standard state is so chosen that

$$\mu_i = \mu_i^\circ \quad \text{at } a_i = 1.$$

In general:

$p^\circ = 1$ bar for gases

$a = 1$ for pure condensed phases.

Specific example:

For the equilibrium between a homogeneous condensed mixture and a gas phase, in the equation $a_i = p_i/p_i^\circ$, p_i is the vapor pressure of the component i in the mixture and p_i° the vapor pressure of that component at the same temperature in the pure state.

1.9 Chemical equilibrium

1.9.1 Gibbs fundamental equation for closed systems

As a consequence of the conservation of the mass of the elements, the following holds for a closed system with several components in which a chemical reaction is taking place:

$$\mathrm{d}n_i = \nu_i \mathrm{d}\xi$$

and when $\xi = 1$, $\mathrm{d}n_i = \nu_i$.

The Gibbs fundamental equation, therefore, takes the following form for the closed system

$$\mathrm{d}G = V\mathrm{d}p - S\mathrm{d}T + \Sigma \nu_i \mu_i.$$

1.9.2 Conditions for chemical equilibrium

The Gibbs energy of the reaction system reaches a minimum for the equilibrium at constant p and T, i.e.

$$\mathrm{d}G_{T,p} = 0$$

$$\Sigma \nu_i \mu_i = 0.$$

This equilibrium equation is also a general formulation of the **law of mass action**. It follows from this that at equilibrium the chemical potential of a particular component is the same in all phases of the system.

1.9.3 Equilibrium constant

The equilibrium relation

$$\Sigma \nu_i \mu_i = 0$$

and the separation of the chemical potential into a standard and a relative potential as shown

$$\mu_i = \mu_i^\circ + RT \ln a_i$$

yields the following relations and definitions:

$$\Sigma \nu_i \mu_i = \Sigma \nu_i \mu_i^\circ + \Sigma \nu_i RT \ln a_i = 0,$$

$$\Delta G_r^\circ = \Sigma \nu_i \mu_i^\circ,$$

(**standard Gibbs energy of reaction**)

$$K = \Pi (a_i)^{\nu_i},$$

(**equilibrium constant**)

$$\Delta G_r^\circ = -RT \ln K.$$

Temperature dependence of K

With $\Delta G_r^\circ = \Delta H_r^\circ - T\Delta S_r^\circ$ follows:

$$\partial(\Delta G_r^\circ/T)/\partial T = -\Delta H_r^\circ/T^2,$$

(**Gibbs-Helmholtz equation**)

$$\mathrm{d} \ln K/\mathrm{d}T = \Delta H_r^\circ/RT^2 \text{ (van't Hoff isochore)}$$

$$\mathrm{d} \ln K/\mathrm{d}(1/T) = -\Delta H_r^\circ/R.$$

These relations, particularly the latter, make it possible to determine the enthalpy of reaction from the values of K obtained at various temperatures.

Limiting cases:

Low temperatures $\Delta G_r^\circ \approx \Delta H_r^\circ$,

High temperatures $\Delta G_r^\circ \approx -T\Delta S_r^\circ$

if ΔH_r° is small.

Pressure dependence of K

The standard Gibbs energy of reaction is defined with respect to a standard pressure (1 bar). Therefore, K is dependent only on temperature and is independent of pressure

$$\partial K/\partial p = 0.$$

In a reaction system a change in the pressure alters the system according to the principle of Le Châtelier, however the equilibrium constant remains the same.

1.10 Mixtures

1.10.1 Gibbs-Duhem equation

For a mixture, G is a homogeneous function of first degree in n_i

$$G(p,T,\lambda n_i) = \lambda G(p,T,n_i).$$

Euler's theorem for homogeneous equations yields

$$G = \Sigma \mu_i n_i$$

whereby

$$\mu_i = (\partial G/\partial n_i)_{p,T,nj\neq i}.$$

This then yields

$$dG = \Sigma n_i d\mu_i + \Sigma \mu_i dn_i.$$

Comparison with

$$dG = Vdp - SdT + \Sigma \mu_i dn_i$$

yields

$$Vdp - SdT + \Sigma n_i d\mu_i = 0$$

(**Gibbs-Duhem equation**).

$$\Sigma n_i d\mu_i = 0 \quad \text{for constant } p,T$$

after division by Σn_i

$$\Sigma x_i d\mu_i = 0 \quad \text{for constant } p,T.$$

1.10.2 Standard states for activities and activity coefficients

The activity a of component i in a mixture is defined by

$$\mu_i = \mu_i^\circ + RT \ln a_i$$

with

$$a_i = \gamma_i \cdot x_i = p_i/p_i^\circ$$

where μ_i° is the chemical potential of component i when this is in its standard state (i.e. for $a_i = 1$), γ_i is the defined activity coefficient and x_i is the mole fraction of i in the mixture. p_i and p_i° are the vapor pressures of i in the mixture and in the standard state respectively. Depending on the problem the following standard states are used:

– pure substance

$$\mu_i = \mu_i^\circ + RT \ln a_i$$

$$a_i = \gamma_i \cdot x_i$$

$$\gamma_i \to 1 \text{ as } x_i \to 1.$$

– hypothetical pure solute with properties as at infinite dilution (obeying Henry's Law)

$$\mu_i = \mu_i' + RT \ln a_i'$$

$$a_i' = \gamma_i' \cdot x_i$$

$$\gamma_i' \to 1 \text{ as } x_i \to 0.$$

The molality m or percentage by weight can be used instead of the mole fraction x

$$\mu_i = \mu_i'' + RT \ln a_i''$$

$$a_i'' = \gamma_i'' (m/m_0);\ m_0 = 1 \text{ mol/kg}$$

$$\gamma'' \to 1 \text{ as } m \to 0$$

$$\mu_i = \mu_i''' + RT \ln a_i'''$$

$$a_i''' = \gamma_i''' \cdot (\%\ \mathrm{i})$$

$$\gamma_i''' \to 1 \text{ as } \%\ \mathrm{i} \to 0.$$

1.11 Gibbs phase rule

The phase rule answers the question as to the maximum number of phases which can co-exist in equilibrium in a system with a prescribed number of components. The variance (degrees of freedom) of the system is given by

$$f = c + 2 - p$$

f = number of degrees of freedom (variance)

c = number of independent components

p = number of phases.

According to Gibbs the term "phase" means a state of matter that is uniform throughout, not only in chemical composition but also in the physical state. The number of independent components c is the minimum number of independent species necessary to define the composition of all the phases present in the system. Correspondingly c is determined by the number of elements contained in the system and by their chemical interactions. However, under certain conditions these interactions cannot be properly effective. Thus, for example, the elements of a compound which are completely dissociated at high temperatures behave like inert species.

Examples:

– pure substance

$$f = 1 + 2 - 1 = 2,$$

i.e. 2 independently chosen variables of state, for example, p and T.

– pure substance in 2-phase equilibrium: solid – liquid or liquid – gas

$f = 1 - 2 - 2 = 1$, e.g. $p = f(T)$.

– pure substance in 3 phases: solid – liquid – gas,

$f = 1 - 2 - 3 = 0$

nonvariant triple point, at which e.g. ice, liquid water and water vapour coexist.

– 3-phase equilibrium

$Fe_3O_4 - FeO - Fe$

$4FeO = Fe_3O_4 + Fe$

$p = 3$: Fe_3O_4, FeO, Fe

$c = 2$: Fe, FeO or Fe, Fe_3O_4 or FeO, Fe_3O_4

$f = 2 + 2 - 3 = 1$: T or p (pressure on the system).

– NH_4Cl dissociation

NH_4Cl (solid) = NH_3 (gas) + HCl (gas)

$p = 2$: solid (NH_4Cl), gas

$c = 1$: both phases are defined by NH_4Cl

$f = 1 + 2 - 2 = 1$ e.g. T or p_{HCl}.

– ZnS dissociation

ZnS (solid) = Zn (gas) + $1/2S_2$ (gas)

$p = 2$: ZnS (solid), gas

$c = 1$: ZnS

$f = 1 + 2 - 2 = 1$: T or p_{Zn}.

– $ZnCO_3$ decomposition

$ZnCO_3$ (solid) = ZnO (solid) + CO_2 (gas)

$p = 3$: $ZnCO_3$ (solid), ZnO (solid), gas

$c = 2$: $ZnCO_3$, CO_2 or ZnO, CO_2

$f = 2 + 2 - 3 = 1$: T or p_{CO}.

– Equilibrium system

ZnO (solid), Zn (gas), CO (gas), CO_2 (gas)

ZnO (solid) + CO = Zn + CO_2

$p = 2$: ZnO (solid), gas

$c = 3$: ZnO, CO, Zn or CO, CO_2, Zn

$f = 3 + 2 - 2 = 3$:
e.g. p_{CO}, p_{CO_2}, p_{Zn} or T, p_{CO}, p_{CO_2}.

1.12 Electrochemical reactions

Electrochemical potential

The electrochemical potential η_i of the component i in the phase α is defined by

$$\eta_i = \mu_i + z_i F \phi_\alpha .$$

μ_i is the chemical potential, z_i the number of transferable charges, F the Faraday constant and ϕ_α the Galvani potential, i.e. electric potential in the phase α in which the charged component i is to be found.

The work that can be perfomed on the transfer of the charged component from phase α into phase β is given by the equation

$$\Delta\eta = \Delta\mu_i + z_i F \Delta\phi .$$

No work is done at equilibrium and the electrochemical potentials of the transferable charged species are the same in both phases

$$\eta_i(\alpha) = \eta_i(\beta).$$

Hence, it follows that

$$\Delta\mu_i = -z_i F \Delta\phi \quad \textbf{(equilibrium)}$$

Galvani potential difference

With

$$\mu_i = \mu_i^\circ + RT \ln a_i \text{ and}$$
$$\Delta\mu_i = \mu_i(\beta) - \mu_i(\alpha)$$

it follows from the equilibrium equation that

$$\Delta\phi = \phi_\beta - \phi_\alpha$$
$$= -\Delta\mu_i^\circ/(z_i F) - (RT/z_i F) \ln [a_i(\beta)/a_i(\alpha)].$$

$\Delta\phi$ is the difference between the electric potentials of two phases and is known as the Galvani potential difference. It is not possible to determine its value and, in the case of aqueous ionic solutions, it is set with respect to the standard hydrogen electrode with $\Delta\phi = 0$.

In the case of ions at unit activity the Galvani potential difference is given by

$$\Delta\phi^\circ = -\Delta\mu_i^\circ/(z_i F)$$

(standard potential difference)

emf

The combination of electrode compartments into an electrochemical cell makes it possible to measure the sums of the Galvani potential differences as the **electromotive force (emf)** of the cell.

Cell reactions

Electrochemical cells are classified into different types depending on the construction and substances employed. For example, a simple elec-

trochemical cell is a galvanic cell consisting of two electrodes dipping into an electrolyte.

The maximum electrical work which a cell can supply is given by

$$\Delta G = -zFE.$$

Where ΔG is the Gibbs energy of the cell reaction, z the number of charges transferred per formula unit, F Faraday's constant and E the electromotive force (emf) of the cell.

Convention:

$E > 0$ when $\Delta G < 0$
(**spontaneous process**).

In equilibrium

$$\Delta G° = -FE° = -RT \ln K$$

where $\Delta G°$ is the standard Gibbs energy and E° the **standard emf** of the cell reaction. $\Delta G°$ is defined for standard pressure (1 bar), therefore, E° depends only on temperature.

In general,

$$E = E° - RT/(zF) \ln \Pi (a_i)^{\nu_i}$$

(**Nernst equation**)

for all concentrations or activities of the species reacting at const. p and T. Here a_i is the activity and ν_i the stoichiometric coefficient of the species i in the actual state of the system.

At equilibrium the product $\Pi (a_i)^{\nu_i}$ is identical to the equilibrium constant K of the cell reaction and with

$$E° = (RT/zF) \ln K$$
$$E = 0.$$

1.13 References to chapter 1

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2 Calculation of thermochemical functions

2.1 Units and conventions

(see Section 10.1 – 10.3)

Units

International organizations such as IUPAC (International Union of Pure and Applied Chemistry) and CODATA (The Committee on Data for Science and Technology) recommend nowadays that thermodynamic quantities be given in SI units.

Temperature	K
Pressure	Pa, MPa or bar
Volume	l mol^{-1} or dm^3 mol^{-1}
Energy (H, G, U, A)	J mol^{-1} or kJ mol^{-1}
Heat capacity (C_V, C_p)	J K^{-1} mol^{-1}
Entropy (S)	J K^{-1} mol^{-1}

Conventions

The standard state of a substance is its pure form under a pressure of 1 bar and at a given temperature.

Standard state pressure = 1 bar

Reference temperature = 298.15 K.

The stable phases of elements in standard states are denoted as reference phases. (See Section 4.5 and Chapter 10).

2.2 Calculation of the thermochemical functions of pure substances

These calculations apply to the thermochemical functions of pure substances in their standard states. The superscript (°) is used only to indicate standard states where clarity is required.

2.2.1 $C_p(T)$, heat capacity

The values of the temperature functions of H, S, G and other quantities are determined by integration of the temperature function of the heat capacity. The function $C_p(T)$ is therefore necessary for thermochemical calculation.

The heat capacities of condensed phases are usually determined by calorimetric measurements, and of gases by statistical mechanical calculations using molecular constants.

In this work the temperature functions of the heat capacities have been:

- taken from standard works
- calculated from known C_p values by polynomial approximation
- estimated.

The molar heat capacities of pure substances can be described with sufficient accuracy over a relatively wide temperature range by means of the following polynomial.

$$C_p(T) = a + bT + cT^2 + dT^3 + eT^{-2} + fT^{-3}.$$

For many **gases** it is not necessary to employ all the terms of the polynomial, particularly if the temperature range is not very wide. C_p is usually constant in the case of **liquids**. For **crystalline phases** the temperature dependence of C_p is not adequately described by a rigorous mathematical approximation. This is particularly true in the vicinity of λ-transition points. In such cases it is necessary to achieve the required accuracy of approximation by limiting the temperature range sharply. Figure 2.1 illustrates two examples of the change of C_p as a function of temperature.

2.2.2 $H(T)$, enthalpy

The absolute value of the enthalpy of a pure substance cannot be determined. It is possible to measure enthalpy changes with the aid of the parameters T and p.

By convention, the concept of the formation reaction is employed for the numerical determination of enthalpy changes. In general the reaction for the formation of a pure substance B from its elements is

$$\nu_1 E_1 + \nu_2 E_2 + \cdots = B$$

where E_i are the elements in the compound B and ν_i are the stoichiometric coefficients. The standard enthalpy of the formation (previously known as the heat of formation) of B at $p^\circ = 1$ bar is defined by

$$\Delta H^\circ_{f,B}(T) = H^\circ_B(T) - \Sigma \nu_{Ei} H^\circ_{ei}(T).$$

It should be noted for clarity that the enthalpy of formation of the reference phases of the elements is zero at 1 bar. So that

$$H^\circ_B\,(298.15) = \Delta H^\circ_{f,B}\,(298.15).$$

The definition of standard enthalpy of formation at 298.15 K forms the basis of rational description

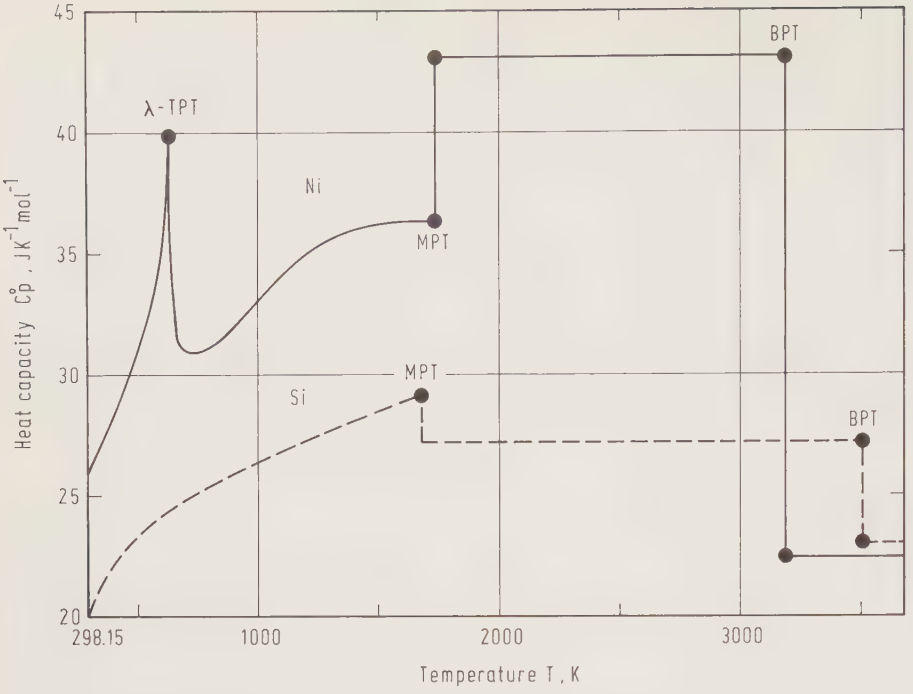


Fig. 2.1: Heat capacities of Ni and Si at 1 bar as functions of temperature. λ-TPT = lambda transition point, MPT = melting point, BPT = boiling point.

of enthalpy changes. In case of gases, an ideal gas at 1 bar and 298.15 K is regarded as the standard state. This applies also to the gases which only exist as stable phases at high temperatures.

The equations from 1.2.6, 1.2.5 and 1.7.3 yield the following equation for the calculation of the enthalpy of a pure substance with reference to the standard state (the superscript ° is omitted).

$$H(T) = H(298.15) + \int_{298.15}^{T_{t1}} C_{p1}(T)\,dT + \Delta H_{t1} + \int_{T_{t1}}^{T_{t2}} C_{p2}(T)\,dT + \Delta H_{t2} + \cdots$$

With this the calculation of the enthalpy increment $[H(T) - H(298.15)]$ is also obtained. Here $H(298.15)$ is the enthalpy of formation of the pure substance at 1 bar and 298.15 K, $C_p(T)$ the temperature function of the heat capacity in the integration range involved, ΔH_{ti} the enthalpy of phase transition i at $T = T_{ti}$.

Figure 2.2 illustrates the change of enthalpy of silicon with temperature. In the case of a first order transition there is a discontinuity in the course of enthalpy. At this point C_p is infinite (see Section 1.7.3).

The enthalpy function $H(T)$ employed in this work is particularly suitable for the calculation of enthalpy changes in technical processes. More calculation is involved if $[H(T) - H(298.15)](T)$ in combination with $\Delta H_f(T)$ is employed for the same purpose. The latter enthalpy values are listed alone in many other tabular compilations.

The functions $C_V(T)$ and $U(T)$ can be calculated with the aid of the relations given in 1.2.5, 1.2.6 and 1.7.3. The properties of substances required for this, such as α and κ, must be reported separately.

Standard works (e.g. JANAF Thermochemical Tables) should be referred to for the values of $H(T)$ and $C_p(T)$ below room temperature and particularly in the region of absolute zero.

2.2.3 $S(T)$, entropy

The equations given in 1.4.3, 1.5 and 1.7.3 yield the following relation for the calculation of the entropy function

$$S(T) = S(298.15) + \int_{298.15}^{T_{t1}} \frac{C_{p1}(T)}{T}\,dT + \frac{\Delta H_{t1}}{T_{t1}} + \cdots$$

$S(298.15)$ is the standard entropy of the pure substance at 298.15 K. The change of the entropy of silicon with temperature is illustrated in Fig. 2.3. As can be seen, the increase in entropy on evaporation is appreciably greater than it is on melting. This is because $k \ln \Omega$ (see Section 1.5) is

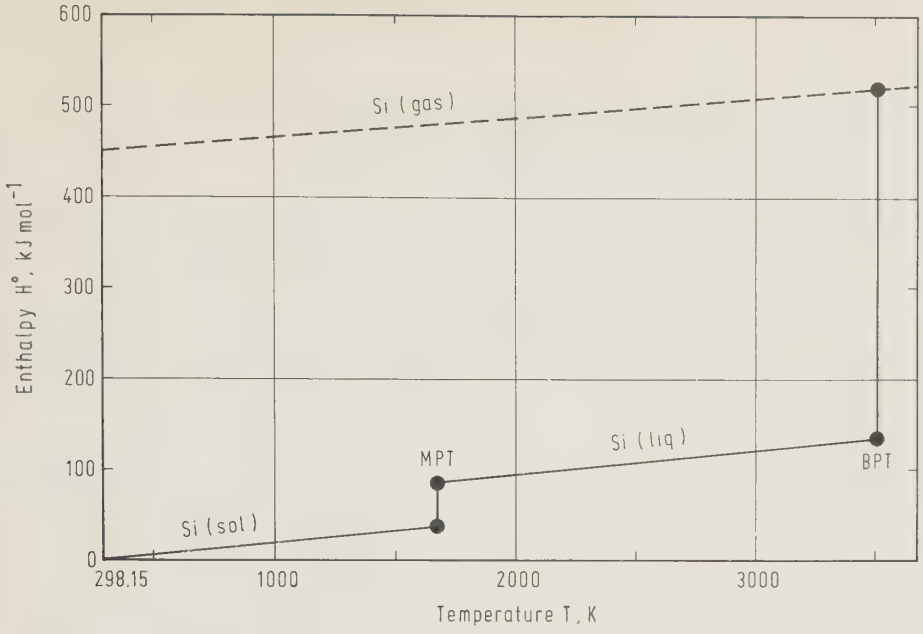


Fig. 2.2: Enthalpy of solid, liquid and gaseous silicon as a function of temperature at 1 bar.

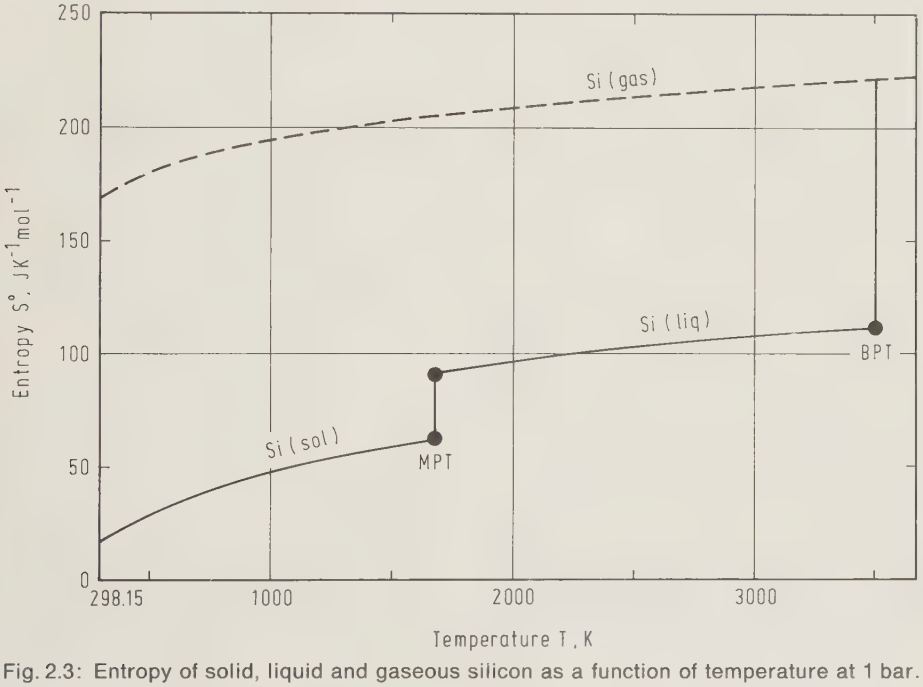


Fig. 2.3: Entropy of solid, liquid and gaseous silicon as a function of temperature at 1 bar.

appreciably greater for gases than for condensed phases.

The definition of standard entropy at 298.15K ($S°(298.15)$) follows from the considerations discussed in Section 1.5 (Third Law):

In general

$$S°(298.15) = S°(T = 0) + \int_0^{298.15} dH/T$$

at $p = 1$ bar.

Phase changes (melting, evaporation) must be taken into account when this integration is carried out. For perfect crystals

$$S° = 0 \quad \text{i.e. } \Omega_C = 1 \quad \text{at } T = 0.$$

The integration can be carried out in the temperature range $0 \leq T \leq T_{bp}$ (T_{bp} = boiling point) using calorimetric data. At temperatures above the boiling point, the formulae of statistical mechanics apply.

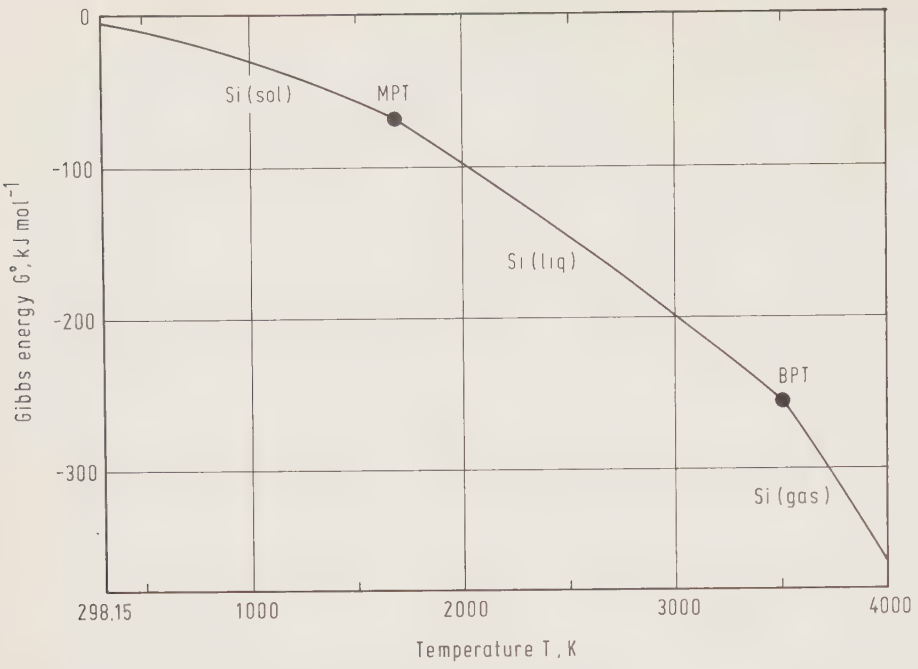


Fig. 2.4: Gibbs energy of silicon as a function of temperature at 1 bar.

2.2.4 *G*(*T*), Gibbs energy

As defined in 1.6.1 and 1.6.2 the Gibbs energy $G(T)$ is calculated from

$$G(T) = H(T) - TS(T).$$

Figure 2.4 shows the temperature dependence of the Gibbs energy of silicon.

Within a particular phase the course of $G(T)$ is approximately linear. The slope of $G(T)$ at the transition points is discontinuous.

$$\Delta G_t = 0 \text{ at } T = T_t.$$

The function $G(T)$ defined here is not often used. Its special nature is found in the employment of the catalogue defined for the function $H(T)$. The function $G(T)$ is particularly suited to the representation of the thermodynamic properties of substances as all basic thermodynamic data can be expressed in terms of this function. In order to save storage space and shorten computing time, substance-related data are often stored in data banks as coefficients of the function $G(T)$.

2.2.5 *G*ef(*T*), Gibbs energy function (free enthalpy function)

Definition:

$$-Gef(T) = -[G(T) - H(298.15)]/T.$$

In accordance with this definition the value of the Gibbs energy function of the substance at 298.15 K and 1 bar is identical with $S(298.15)$:

$$-Gef(298.15) = S(298.15).$$

It also follows from the definition that the following equation can be employed for the calculation of the equilibrium constant of a reaction:

$$-R \ln K = \Sigma \nu_i Gef_i - \Sigma \nu_i H_i(298.15)/T.$$

ν_i is positive for products and negative for reactants.

The negative of *G*ef of silicon is plotted as a function of temperature in Fig. 2.5a and 2.5b.

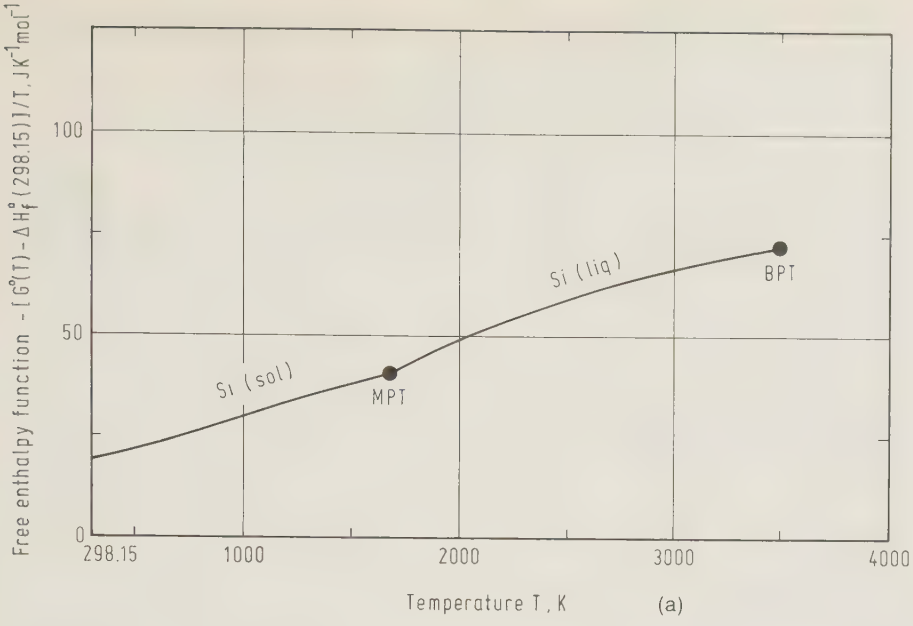
As can be seen from this, *G*ef changes relatively slowly with changing temperature. In addition $Gef(T)$ can be represented relatively well by linear functions both for the temperature range within a phase and for the whole temperature range covering several phase transitions. For this reason $Gef(T)$ is very often employed for the evaluation of thermochemical data by the "Third Law method".

If $S°(298.15)$ and $C_p(T)$ for a substance are known, it is possible to determine the value of $\Delta H_f(298.15)$ relatively easily from the experimentally determined $G(T)$ values by the use of $Gef(T)$.

For a chemical reaction:

$$-\Delta Gef_r(T) = -\Delta G_r(T)/T + \Delta H_r(298.15)/T.$$

If the Gibbs energy or the equilibrium constant of a reaction is determined experimentally at a



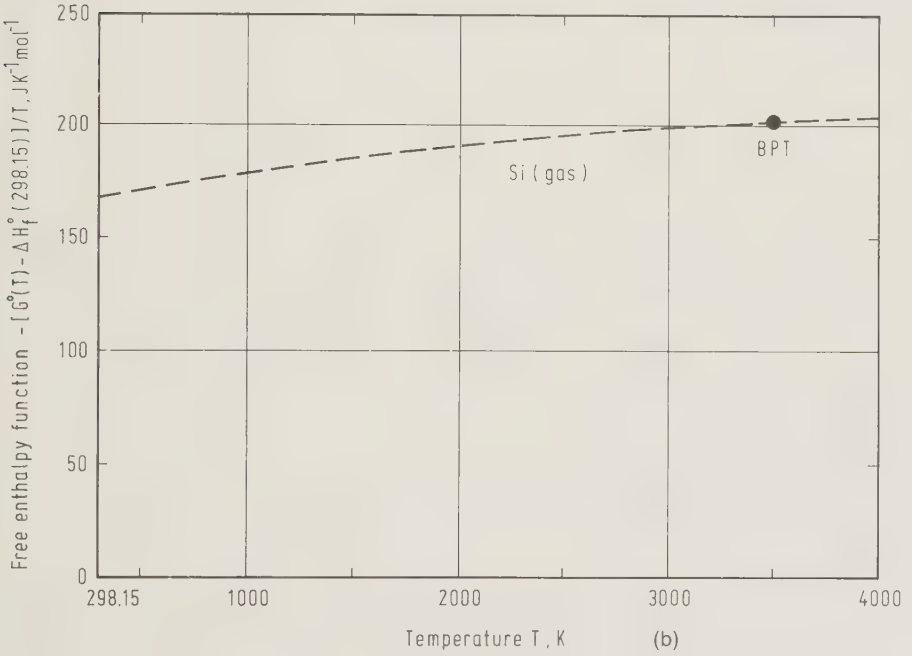


Fig. 2.5: Gibbs energy function (free enthalpy function) of silicon for the solid and liquid phases (a) and the gaseous phase (b) as a function of temperature at 1 bar.

temperature > 298.15 K (e.g. by emf measurements), then every measurement yields a value of $\Delta H_r(298.15)$. However, a condition for this is that $S(T)$ and $[H(T) - H(298.15)]$ are known. This precondition means that the increment of the Gibbs energy, i.e. $G(T) - G(298.15)$ must be known. This reveals that the function $G(T)$ is sufficient for analysis by the "Third Law method". Nevertheless, the changes in $G(T)$ and $\Delta G(T)$ are greater than is the case for $G\mathrm{ef}(T)$ and $\Delta G\mathrm{ef}(T)$, so that these latter are often preferred for a "Third Law" analysis.

2.2.6 $\Delta H_f(T)$, $\Delta G_f(T)$, $\log K_f(T)$; molar quantities of formation from the elements

The following equations apply to the formation of a compound B from its elements E_i in their reference phases at 1 bar and at a given temperature

$$\Delta H_{f,B}(T) = H_B(T) - \Sigma \nu_{Ei} H_{Ei}(T)$$

$$\Delta G_{f,B}(T) = G_B(T) - \Sigma \nu_{Ei} G_{Ei}(T)$$

$$\log K_{f,B}(T) = -\Delta G_{f,B}(T)/(RT \ln 10).$$

$\Delta H_{f,B}$ enthalpy of reaction for the formation of B from the elements E_i

H_B enthalpy of B

H_{Ei} enthalpy of the element E_i

$\Delta G_{f,B}$ Gibbs energy of the reaction for the formation of B from the elements E_i

G_B Gibbs energy of B

G_{Ei} Gibbs energy of the element E_i

$\log K_{f,B}$ Logarithm of the equilibrium constant of the reaction for the formation of B from E_i.

The formation reactions are formulated on the basis of the standard state pressure of 1 bar and with respect to the reference phases of the elements at the given temperature. Accordingly, for the **elements in their reference phases**, it follows that

$$\Delta H_{f,E} = 0$$
$$\Delta G_{f,E} = 0$$
$$\log K_{f,E} = 0.$$

The quantities of formation ΔH_f, ΔG_f and $\log K_f$ allow an immediate assessment of the stability of the substance.

In the case of substances, which are produced from elements in the same phase and without phase change, ΔH_f only changes slightly. If the state of aggregation of the elements changes (melting, evaporation) this makes itself evident in the value of ΔH_f. For instance, large changes occur in ΔH of the compounds Na_2O, NaO (gas) as a result of the melting and vaporization of Na. Such changes also appear in ΔG_f for NaO (gas), while ΔG_f Na_2O (solid, liquid) increases uniformly with temperature. Because ΔG_f $(Na_2O) < 0$ the absolute value decreases, i.e. the thermal stability of Na_2O decreases with increasing temperature, when the activities of Na and O_2 are maintained constant.

Note

The numerical values of molar quantities of formation change by changing the reference phases of elements involved in the reaction of formation. This should be born in mind during calculations using data from different sources. In the present tables the molar quantities of formation of sulfur compounds (sulfides, sulfates, etc.) are calculated with regard to following reference states for sulfur:

$$S(sol_1) \rightarrow S(sol_2) \rightarrow S(liq) \rightarrow S_2(gas)$$

(see Table in Chapter 10).

Nevertheless, there are thermochemical tables where S_2(gas) is considered as reference state at all temperatures, beginning with $T = 298.15$ K.

2.3 Equilibrium calculations

2.3.1 $K(T)$, equilibrium constant

The equilibrium constants of reactions can be calculated from $\log K_f$ values by simple summation.

For the general reaction

$$\nu_{R1} R_1 + \nu_{R1} R_2 + \ldots = \nu_{P1} P_1 + \nu_{P1} P_2 + \ldots$$

where R_i represents the reactants and P_i the products.

With

$$K = \Pi\, (a_i)^{\nu_i}$$

K can be calculated from

$$\log K = \Sigma\, \nu_i \log K_{f,i}.$$

As explained in Section 1.9, $\log K$ and $\log K_{f,i}$ are only functions of temperature.

Examples for calculation of $\log K$:

$$ZnS + \frac{3}{2} O_2 = ZnO + SO_2$$

$$\log K = \log K_f(ZnO) + \log K_f(SO_2) - \log K_f(ZnS) - \frac{3}{2} \log K_f(O_2).$$

The $\log K_f$ values of the elements are zero by definition when the elements are in their reference phases.

In reactions where a substance is formed from the elements (in their reference phases) the equilibrium constant can be determined directly from the $\log K_f$ values of that substance:

$$\frac{1}{2} O_2 + C = CO \qquad \text{(a)}$$
$$\log K_a = \log K_f(CO)$$

$$\frac{1}{2} H_2 = H \qquad \text{(b)}$$
$$\log K_b = \log K_f(H)$$

$$NO = \frac{1}{2} N_2 + \frac{1}{2} O_2 \qquad \text{(c)}$$
$$\log K_c = -\log K_f(NO).$$

2.3.2 $p°(T)$, vapor pressure

The vapor pressures of condensed substances can be calculated from the values of log K_f on the basis of the equilibrium reaction for evaporation.

Example:

$$NaCl\ (liq) = NaCl\ (gas)$$

$$\log p°(KCl) = \log K_f(NaCl\ (gas)) - \log K_f(NaCl\ (liq)).$$

In the case of elements, the values of log K_f for vapor phases are identical with log p, where p is the vapor pressure related to 1 bar.

Example:

$$Ag\ (sol, liq) = Ag\ (gas)$$

$$\log p°(Ag) = \log K_f\ (Ag\ (gas)),\ \text{at } T \leq T_{bp}$$

where T_{bp} is the boiling point. When $T > T_{bp}$ the log K_f values for condensed phases have to be taken into account.

2.3.3 $E°(T)$, standard emf

Aqueous solutions

The Gibbs energy of reaction between ions in solution is calculated by summation of the Gibbs energy of formation of the ions concerned. Here it is set by convention in the half cell $H_2(Pt)|H^+_{aq}$, $p_{H2} = 1$ bar, $T = 298.15$ (reference half cell) that

$$^1/_2H_2 = H^+_{aq} + e^-,$$

$$\Delta G_f°(H^+_{aq}) = 0.$$

The standard Gibbs energy of formation of the proton in water is zero.

The standard Gibbs energies of ions in aqueous solution are reported on the basis of this convention (e.g. in the NBS Tables of Chemical Thermodynamic Properties, Termicheskie Konstanty Veshestv) (see References Section 3.4).

$E°(T)$, standard emf of a cell

According to the equilibrium equation (Section 1.12)

$$\Delta G_r° = zF\,E° = -RT \ln K_r$$

or

$$E° = -\Delta G_r°/(zF) = (RT/zF) \ln K$$

and

$$\Delta G_r° = \Sigma \nu_i \Delta G_{fi}, \quad \log K = \Sigma \nu_i \log K_{fi}$$

it is possible to calculate $E°(T)$ from the values of ΔG_f or of log K_f.

Example

Decomposition of $MgCl_2$:

$$Mg^{2+} + 2e_L = Mg \qquad \text{electrode reaction L}$$

$$2Cl^- = Cl_2 + 2e_R \qquad \text{electrode reaction R}$$

$$MgCl_2 = Mg + Cl_2 \qquad \text{cell reaction}$$

$MgCl_2$ and Mg are liquid and Cl_2 is gaseous.

$$E° = -\Delta G_f\,(MgCl_2)/(zF)$$

$$E = E° + RT \ln [a_{Mg} P_{Cl_2}/a_{MgCl_2}]$$

When a_{Mg} (pure liquid) = 1 and $p_{Cl_2} = 1$ bar (ideal gas) E can be calculated if T and the activity of $MgCl_2$ in molten salt are known.

2.4 Exergy and entropy balances

Exergy and entropy balances are employed for the analysis and optimization of energy utilization in technical processes. To do this the total technical facility is divided up into individual balance volumes (component units) which are connected to each other by mass and energy exchange.

The calculation of entropy and exergy fluxes for each unit leads to quantitative evaluation of the potential "working performance" of a system.

The exergy ε of a system is a measure (defined with respect to the surroundings) of the ability of the system to perform technical work. Exergy is maintained for reversible processes and is lost in irreversible processes.

2.4.1 Calculation of exergy

Exergy of heat

The exergy ε_Q of the heat Q, that is available at temperature T when the temperature of the surroundings is T_0 e.g. 298.15 K, is given by

$$\varepsilon_Q = Q(T - T_0)/T = \Delta S(T - T_0) = W.$$

Where ΔS is the entropy change in the system and W the work. ε_Q corresponds to the maximum work that can be performed by transfer of heat Q in passing from temperature T to T_0.

Exergy of technical work

$$\varepsilon_W = W.$$

The exergy of work is identical with the work. In the case of reversible processes ε_W can always be recovered as work. This also applies to the exergy of electrical energy.

Exergy of a system of substances

The exergy of a system made up of one substance or of several substances at pressure p and temperature T is defined by

$$\varepsilon_{sys} = (H - H_0)_{sys} - T_0(S - S_0)_{sys}.$$

Where H and S are the enthalpy and entropy of the system at p and T, H_0 and S_0 the enthalpy and entropy of the system at p_0 and T_0 in the surroundings (e.g. $p_0 = 1$ bar, $T_0 = 298.15$ K).

Consider helium at $p = 1$ bar and $T = 1300$ K as a system with the surroundings characterized by $p_0 = 1$ bar and $T_0 = 298.15$ K, then the exergy calculated according to the above equation is the work that would be done by cooling the helium from 1300 K to 298.15 K in a reversible manner (e.g. by means of a series of Carnot cycles).

Exergy of open systems

In the case of a stationary state in a flow reactor in which the reactants enter in differing states and the products exit at pressure p and temperature T the change in exergy is given by

$$\Delta\varepsilon_r = \Delta H_r - T_0 \Delta S_r.$$

Where ΔH_r is the enthalpy change in the balance volume under consideration and is calculated from

$$\Delta H = \Sigma H(\text{products}) - \Sigma H(\text{reactants}).$$

So ΔH_r and ΔS_r represent the enthalpy and entropy of a non-isothermal total reaction.

It is possible to calculate exergies (for a particular surrounding temperature T_0) from the H and S values listed in the tables by simple calculations. Here the composition of the products can correspond to the equilibrium state at p and T.

2.4.2 Entropy production by irreversibilities

If an open system in a stationary state is considered, e.g. a chemical reactor which is exchanging heat and matter with the surroundings at T_0, then, at constant p, according to the First and Second Laws of thermodynamics the following balances pertain:

$$\Delta H_r - Q + W = 0$$

$$\Delta S_r - Q/T_0 - S_{irr} = 0.$$

Here ΔH_r is the enthalpy of the total reaction (= enthalpy of the products − enthalpy of the reactants), Q is the heat transferred from the reactor to the surroundings at T_0 (heat losses by cooling), W is the mechanical or electrical work performed in operating the reactor, ΔS_r the entropy of the total reaction (= entropy of the products − entropy of the reactants), Q/T_0 is the entropy leaving the system during reversible heat exchange at T_0, and S_{irr} is the entropy production in the reactor resulting from irreversible processes (e.g. reactions).

In the case of a reactor operating isothermally and isobarically where $W = 0$, it follows from the balance equation above that

$$S_{irr} = \Delta S_r + \Delta H_r/T_0$$

and, hence,

$$\varepsilon_r = T_0 S_{irr}.$$

ε_r is the exergy loss (availability) in the balance volume under consideration and is directly proportional to the entropy production. Hence irreversible processes lead to a loss of potential work which could be done by the system.

If the reactor exchanges heat with a flowing fluid (gas or liquid), then the mean heat exchange temperature T_m is given by

$$T_m = \Delta H_{fl}/\Delta S_{fl}.$$

ΔH_{fl} and ΔS_{fl} are the enthalpy and entropy changes in the fluid stream resulting from the heat exchange with the reactor. The indirect heating of a reactor with hot gas is an example. In this case the exergy of the heat is

$$\varepsilon_Q = Q(T_m - T_0)/T_m.$$

The complete entropy and exergy balance would include the heat exchange with the fluid medium in the balance compartment.

2.4.3 References on exergy and entropy relations

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Part II
Compilation and Presentation of Thermochemical Data

3 Compilation of thermochemical data

3.1 Basic thermochemical data

The calculation of the thermochemical functions of a pure substance over a given temperature range demands a particular set of basic thermodynamic data. These basic data are unequivocally defined in terms of standard states and reference phases and temperatures. They comprise the following quantities:

ΔH_f° (298.15) Standard enthalpy of formation from the elements in their reference phases at $p = 1$ bar and $T = 298.15$ K.

The standard enthalpy of formation is zero for elements in reference phases.

S°(298.15) Standard entropy, entropy of the substance at $p = 1$ bar and $T = 298.5$ K.

$C_p^\circ(T)$ Temperature dependence of the heat capacity of the substance concerned over the temperature range under consideration at $p = 1$ bar. In general at least one $C_p(T)$ function is required for each phase of every substance.

T_t° Transition temperature at 1 bar.

ΔH_t° Standard enthalpy of transition at the transition temperature.

3.2 Existing compilations

The first compilations of thermochemical data were made about 100 years ago. Today there is a range of comprehensive tables of thermochemical data for pure substances [1 – 12] (see Section 3.4).

The primary data sources are individual publications reporting the results of experimental investigations and supplementary theoretical calculations. The bases for these are calorimetric determinations of enthalpies of reaction, phase transformation and heat capacities, vapor pressure determinations, emf measurements, equilibrium determinations etc.

The majority of specialist publications report one or more properties of a substance or of a limited range of substances. It is rare that the complete sets of data necessary and sufficient for the calculation of thermochemical functions over a given temperature range are reported.

Complete sets of data are produced by compilation and critical evaluation of the available data. The data included in a set must firstly be reliable and precise, i.e. correct, and, on the other hand, they must be consistent, i.e. the conclusions derived from the various pieces of information in the set must be consistent. For instance if a source A yields a temperature variation of the enthalpy of a liquid and source B the vapor pressure curve, then, if they are consistent both pieces of information must lead to the same results with respect to the boiling point and the enthalpy of evaporation.

Often only a few pieces of information are missing from a complete data set. Thus, for example, the standard entropy and heat capacity of crystalline substances (particularly of intermetallic compounds and oxides with several cations) can be determined with sufficient accuracy by estimation [8].

Methods of estimation of thermodynamic data of organic substances are discussed in [5] and especially in [11].

The consistency criterion is not only employed within a data set for a particular substance, but also between the data of various substances; the thermochemical data of a substance can be determined on the basis of several reactions [1]. Because of the large amount of both available and periodically appearing material the establishment of self-consistent data for all substances that have been the subject of thermochemical investigation is a considerable and demanding task. This task was, and still is today, undertaken by experts in large institutes.

3.3 Thermochemical tables

The data collections named have been revised and enlarged during the last 20 years; new collections have also appeared.

The compilations of NBS [1], ANU [2] and JANAF [4] have been produced on the basis of the self-consistency criterion. In most sets of tables the consistency is realized within a single substance data set only. Such data are also eligible and can be correct, however. The accuracy of thermochemical measurements is often not sufficient for the consistency testing that can now be carried out by computer processing.

Many substance data have been determined repeatedly in the past. In many cases the deviations may be regarded as small from the standpoint of experimental thermochemistry. CODATA [13] have set up key values by choosing from all the available data, and these can be employed as standard values, particularly for thermochemically well-investigated substances.

As far as content is concerned, it is possible to distinguish between two types of tabular compilation:

a) Tables of thermodynamic properties of substances in standard states at 298.15 K [1 – 3, 5, 8, 11, 12]:
Compilations of NBS [1] and ANU [2] also include ΔH_f° to 0 K and $[H^\circ(298.15) - H^\circ(0)]$ together with the basic data for aqueous solutions of the species. Compilations [2, 3, 8, 11, 12] also contain data for phase transitions. The compilations listed under a) often do not provide the complete basic data for a substance.

b) Tables of thermochemical functions at various temperatures in steps of 100 K [3 – 7, 9 – 10]: The data sets are complete in these compilations. In JANAF Tables [4] the values of all functions are also reported for 0 K and, furthermore, the temperature range is extended up to 6000 K in the tables of various gaseous species.

3.4 References to Section 3.2 and 3.3

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15. G. Eriksson: SOLGASMIX, a computer programm for calculation of equilibrium compositions in multiphase systems, Chem. Scr., *8* (1975) 100 – 103.

Part III
Tables in the Present Work

4 Preparation of the tables

4.1 General remarks

These tables have been compiled with the aim of including the substance states as completely as possible in thermochemical calculations. To this purpose efforts have been made to present tables in a uniform manner for as large a number of substances as possible after consideration of all available data and estimates. The intention is to provide engineers and scientists in industry, research and the universities with the capability of performing calculations on a multiplicity of substance systems.

Processing of natural raw materials and technical intermediates involves substance systems with diverse elements and phases. When appropriate methods are employed, the practical relevance of a thermochemical calculation depends not only on the accuracy of the data but also on the comprehensive inclusion of all conceivable and possible substance variants in the system under consideration.

The data presented in these tables also form the data base for the thermochemical software package EQUITHERM (see Section 7.6). This system is equipped with control and calculation programs which can be employed for carrying out thermochemical calculations on personal computers. The SOLGASMIX program, for the calculation of equilibrium states and energy balances in substance systems with several elements and phases, makes up a significant part of EQUITHERM.

4.2 Data sources, accuracy

In addition to the large data collections, a range of individual publications were also employed as data sources in the compilation of these tables. A relatively large number of data (ca. 900) were determined by estimation. In general, the data in established standard works were preferred. The sources employed for the particular properties are given in the appropriate tables.

Substance data from various sources have been included in an effort to make as many substances as possible accessible to at least approximate calculations. In the case of individual substances and groups of substances the aim has been to use the data from one source. It was not possible to meet strict consistency criteria when combining data from various sources to form a data set for a substance. The inaccuracies resulting from this lie in most cases within thermochemically acceptable limits.

In some sources, the enthalpies of formation or the Gibbs energies of oxide compounds with several cations (silicates, aluminates etc.) are reported in terms of the reactions of formation from the constituent oxides. In such cases the data have been corrected with respect to the corresponding basic data of the constituent oxides presented in this work.

In the computer-aided calculation of phase diagrams (e.g. in silicate systems) considerable uncertainties in melting points (10 K and more) result from variations in enthalpy of formation of 1 kJ mol^{-1}. It must be remembered in this connection that the enthalpies of formation of some Al and Cr silicates can only be reported to an accuracy of $\pm$ 10 kJ mol^{-1}.

4.3 Units

a) Units of tabulated functions

Quantity	Symbol	Unit
Temperature	T	K
Heat capacity	C_p	J K^{-1} mol^{-1}
Entropy	S	J K^{-1} mol^{-1}
Gibbs energy function	Gef	J K^{-1} mol^{-1}
Enthalpy	H	kJ mol^{-1}
Enthalpy increment	$H-H(298.15)$	kJ mol^{-1}
Gibbs energy	G	kJ mol^{-1}
Enthalpy of formation	ΔH_f	kJ mol^{-1}
Gibbs energy of formation	ΔG_f	kJ mol^{-1}
Equilibrium constant of formation reaction	log K_f	–

b) Units of various constants

Quantity	Symbol	Unit
Gas constant	R	$J\,K^{-1}\,mol^{-1}$
Thermochemical calorie	1 cal	4.184 J

Tables for fundamental constants, conversion factors for energy units and entropy gases are presented in Chapter 8.

4.4 Standard states

Standard state pressure = 1 bar = 0.1 MPa

Conventional reference temperature = 298.15 K

The **standard state of a substance** is its pure form in a defined state of aggregation at a pressure of 1 bar and a specified temperature. It is denoted by the index °, e.g. $H°$, $S°$, $\Delta H°$. The conventional reference temperature for the specification of energy functions (enthalpy) is 298.15 K = 25°C (room temperature).

The standard state phases of pure substances at 1 bar are specified as follows

Phase of standard state	Abbreviation
Ideal gas	(gas)
Liquid	(liq)
Crystalline solid	(cr or sol)
Amorphous solid	(am)
Vitreous or glass solid	(glass)

4.5 Reference phases for the elements at 298.15 K and 1 bar

Reference phase	Elements
Ideal gas	Ar, Cl_2, F_2, H_2, He, Kr, N_2, Ne, O_2, Rn, Xe, e^- (electron)
Liquid	Br_2, Hg
Crystalline solid	all other elements

The reference phases for the elements covered in the present tables are specified in the table in Chapter 10. There, the temperature limits of the reference phases are also given.

5 Construction of the tables

5.1 Arrangement of the tables

The tables are arranged in alphabetical order according to the usual chemical formulae of the substances.

Primary classification: All substances are arranged in alphabetical order of the first element in the chemical formula.

Secondary classification: Substances having the same first element in their formulae are arranged in alphabetical order of the second element. The secondary classification is not strictly adhered to because account is taken of particular bonding relationships.

A table is provided first for the reference phase of each substance at 298.15 K. In the case of compounds this state is that state of the substance which at 298.15 K is stable with respect to its other states (modifications).

The order in which the tables are arranged is:

a) Reference phase

b) Gaseous phase

c) Metastable phases

The data for all gaseous substances are tabulated separately for the case of an ideal gas, i.e. the gas phase is not included in the multiphase tables.

Examples:

Order of substances

Ag	$CaZrO_3$	
⋮	Ca_3P_2	Pu_2O_3
Ag_2WO_4	⋮	⋮
Al	CaPb	PuOBr
⋮	⋮	PuOCl
CaO	GaAs	PuOF
CaO (g)	$Ga(AsO_4)_2$	PuOI
CaO_2	$GaBr_3$	⋮
⋮	⋮	ZrO_2 (g)
$Ca_2F_2O_5$	Ga_2O_3	$ZrSiO_4$
CaOH (g)	⋮	ZrS
$Ca(OH)_2$	Pu_2C	ZrS_2
$CaHfO_3$	$PuCl_3$	e^-
⋮	⋮	

Several tables for one substance

Ag (sol, liq)
Ag (gas)

Na_2SO_4 (sol-5, sol-4, sol-1, liq)

Na_2SO_4 [III] (sol-3)

SiO_2 (low quartz, high quartz, high cristabolite, liq)
SiO_2 [CR] (low cristabolite)

ZnS (Wurtzite, liq)
ZnS (gas)
ZnS [S] (Sphalerite)

All substances contained in the tables are listed with formula and name in the **chemical formula index** in alphabetical order. In order to simplify the search for substances in the tables, the formulae of the substances are also listed in a **modified Hill index**. In this index the formulae are listed according to the alphabetical order of the elements (see Chapter 12).

5.2 Order of the phases in the tables

The order of the phases in a table follows the order of stability of the condensed phases. Insofar as data are available for them, all condensed phases of a substance are included in a table.

Examples for the order of phases:

Fe	Iron
SOL-A	(α, cristalline solid)
SOL-B	(β, cristalline solid)
SOL-C	(γ, cristalline solid)
SOL-D	(δ, cristalline solid)
LIQ	(liquid)

Fe (g)	Iron (gas)
GAS	(Ideal gas)

Si	Silicon
SOL	(cristalline solid)
LIQ	(liquid)

Si (g)	Silicon (gas)
GAS	(ideal gas)

The abbreviations for phase description are defined in the **list of symbols** in Chapter 9.

6 Contents and structure of the tables

6.1 Formula, name and relative molar mass

Each substance is identified by the usual form of its chemical formula and by its most commonly employed chemical name. In some cases, with intermetallic compounds in particular, the name corresponds to a list of the chemical elements in the formula. The molar masses (g mol^{-1}) are calculated from the relative atomic masses of the elements taking $A_r = 12$ for ^{12}C and are reported at the beginning or end of the first line.

6.2 Tabulated functions

All values relate to standard states. The quantities of formation relate to the reactions for the formation of the substance from its elements in their reference phases.

The order of the columns in the tables was chosen by consideration of the dimensions and corresponds to the internationally accepted form.

Quantities

T:	Temperature
C_p:	$C_p^\circ(T)$, heat capacity
S:	$S^\circ(T)$, entropy
$-(G-H298)/T$:	$-[G^\circ(T) - \Delta H_f^\circ(298.15)]/T$, Gibbs energy function, $-Gef$ (Free enthalpy function)
H:	$H^\circ(T)$, enthalpy
$H-H298$:	$H^\circ(T) - \Delta H_f^\circ(298.15)$, enthalpy increment
G:	$G^\circ(T)$, Gibbs energy (Free enthalpy)
ΔH_f:	$\Delta H_f^\circ(T)$, enthalpy of formation reaction
ΔG_f:	$\Delta G_f^\circ(T)$, Gibbs energy of formation reaction
log K_f:	log K_f°, logarithm of the equilibrium constant of formation reaction

6.3 Sequence of temperatures

Each table starts with data for 298.15 K. At this temperature

$$S = S^\circ(298.15)$$

$$H = \Delta H_f = \Delta H_f^\circ(298.15).$$

The temperatures are then raised in steps of 100 K beginning with 300 K.

6.4 Phase transitions

In the case of a phase transition between two condensed phases the values of the functions at the transition temperature are quoted for each phase. The enthalpy of transition and the entropy of transition calculated from it are reported in a separate line under H and S in the appropriate dimensions.

6.5 The final temperature in the tables

The tables for solid and liquid substances end either with a phase transition point or with an upper calculation limit, below which data were available. The final temperature is always a calculation limit in the case of gaseous substances. With condensed substances there are the following special cases for the final temperature T_e:

a) T_e = BPT: boiling point, where the vapor pressure of the substance, which evaporates congruently, is 1 bar.

b) T_e = NBPT: natural (normal) boiling point, at which the vapor pressure is 1.01325 bar = 1 atm. This case especially applies to substances which evaporate with the formation of various gas-phase species, e.g. associates.

c) T_e = SPT: sublimation point, at which the sum of the partial pressures of the gaseous species Σp_i (gas) amounts to 1 bar.

d) T_e = NSPT: normal sublimation point, where Σp_i (gas) = 1 atm.

e) T_e = DPT: decomposition point, at which the substance is transformed to other substances, e.g. SOL-A into SOL-B and a liquid mixture (peritectic reaction in binary systems). However, dissociation processes with the formation of gaseous substances are also included. At T = DPT, Σp_i (gas) = 1 bar.

f) T_e = NDPT: normal decomposition point, Σp_i (gas) = 1 atm.

g) T_e = MPT: melting point.

h) T_e = transition point.

i) $T_e = T$, an arbitrary temperature, which represents an upper calculation limit. The phase transition data (e.g. of evaporation) of some substances are not known with sufficient accuracy. In such cases the calculations are terminated shortly below or above the transition temperature.

Apart from the last case (i) the final temperature is specified, in most cases, at the end of the table.

6.6 References for the sources of data

The references covering the basic data, additional information and comments are given separately for each phase at the foot of the table.

Where

H = ΔH_f° (298.15) or

ΔH_t (enthalpy of transition)

S = S°(298.15)

C_p = heat capacity

Remarks = additional information and remarks.

Example to explain the presentation of references:

	H / S
H and S from source A	A
H from A, S from B	A / B
ΔH_t from B	B
H from A, S estimated	A / e
H and S from A but altered	A, e
H and S obtained from B and supplemented by estimates	A, e

The references for additional information are at the beginning of the line concerned (under "Remarks").
The abbreviations used for references are listed in Chapter 11.

6.7 Abbreviations and symbols

The abbreviations employed in the tables are listed in Chapter 9.

Part IV
Examples of the Use of the Tables

7 Examples of thermodynamic calculations

7.1 Enthalpy changes

7.1.1 Enthalpy of air

1 m^3 of air at 1 atm and 298.15 K (1.1846 kg of air) is heated to 800 K at a constant pressure of 1 atm. Calculate the quantity of heat needed.

Assumptions:

Air is assumed to be an ideal mixture of 79% N_2 by volume and 21% O_2 by volume. No chemical reactions take place (the formation of NO compounds can be neglected at temperatures below 1000 K).

Ideal gas equation: $pV = nRT$.

Gas constant:

$$R = 83.1441 \text{ cm}^3 \text{ bar K}^{-1} \text{ mol}^{-1}$$
$$= 82.0568 \text{ cm}^3 \text{ atm K}^{-1} \text{ mol}^{-1}$$
$$1 \text{ atm} = 1.01325 \text{ bar.}$$

The enthalpy of ideal gases is independent of the pressure. Hence the values of the enthalpies for N_2 and O_2 at 1 bar also apply to 1 atm. The enthalpy changes between 298.15 K and 800 K result from the heat transferred at 1 bar.

Solution:

According to the ideal gas equation and the conditions assumed above 1 m^3 of air at 1 atm and 298.15 K contains 32.291 mol N_2 and 8.584 mol O_2.

The following values are to be found in the tables for N_2 and O_2:

Substance	T [K]	$H - H298$ [kJ mol^{-1}]
N_2	800	15.046
O_2	800	15.836

Multiplication of the enthalpy changes by the molar quantities, followed by addition, yields the heat requirement

$$Q = 621.18 \text{ kJ.}$$

Note:

N_2 and O_2 are both diatomic gases. Hence their C_p values and enthalpy changes differ little from one another.

7.1.2 Heating and melting a metal

Question:

What is the quantity of energy required to heat 1 kg aluminium from 298.15 K to 1000 K at a pressure of 1 bar? Aluminium is liquid at 1000 K.

Assumptions:

The temperature of aluminium is increased by transfer of heat from an electrical or gas heater (furnace).

The heat entering the mass of aluminium at constant pressure is equal to the enthalpy change of aluminium.

Solution:

The table for aluminium yields:

Atomic mass = 26.982 g mol^{-1}

1 kg aluminium contains 37.062 mol Al.

$$[H - H298] = 30.950 \text{ kJ mol}^{-1}$$
at $T = 1000$ K.

So

$$Q = 37.062 \times 30.950 = 1147.069 \text{ kJ.}$$

Note:

If the melting process takes place in 5 minutes in an electric furnace, then the power output of the furnace must be

$$1147.069/(5 \times 60) = 3.8 \text{ kW.}$$

However, on application of this calculation in practice, account must be taken of the fact that only part of the electrical energy supplied to the electric furnace will be "transferred" to the aluminium. An appreciable part of the energy output is transmitted to the surroundings as heat. In addition the duration of the heating process de-

pends on the heat transfer rate, which depends on the construction of the furnace and on the geometrical and physical properties of the body being heated. Hence, the energy requirements and power outputs calculated are minimum values and serve as a reference point.

7.1.3 Final temperature in an adiabatic process

a) Reactants at room temperature

The following reaction is to take place in a vessel insulated against heat exchange and continuously maintained at a pressure of 1 bar.

$$CH_4 + 2O_2 + 7.524N_2 + CaCO_3 \rightarrow 2CO_2 + 2H_2O + 7.524N_2 + CaO.$$

At the beginning the reactants are at 298.15 K.

Question:

What is the final temperature in the vessel?

Explanation:

Initial state 1 mol CH_4, 2 mol O_2, 7.524 mol N_2 (ideal gases), 1 mol $CaCO_3$, Pressure = 1 bar
Temperature = 298.15 K

Final state 2 mol CO_2, 2 mol H_2O, 7.524 mol N_2 (ideal gases), 1 mol CaO, Pressure = 1 bar, Temperature = T_f

The molar quantities of oxygen and nitrogen have been chosen to correspond to the composition of the air.

Basis:

The enthalpy of the isolated system at constant pressure is constant. This means that the question to be answered is: At what temperature is the sum of the enthalpies of the products the same as the sum of the enthalpies of the reactants?

Solution:

Classical graphical methods will be employed to simplify the explanation.
The enthalpy values of the substances involved in the reaction are listed in the following table.

Figure 7.1 is a plot of the sums of the enthalpies of the reactants and products as functions of temperature. As can be seen the enthalpies of the products increase almost linearly over the chosen temperature range. Linear interpolation yields a final temperature T_f of 1599 K.

Substance	n mol	H [kJ mol^{-1}]				
		298.15 K	1400 K	1500 K	1600 K	2000 K
CH_4	1	−74.873				
O_2	2	0				
N_2	7.524	0				
$CaCO_3$	1	−1206.921				
$\Sigma\, n_i H_i$ reactants		−1281.794				
CO_2	2		− 337.606	− 33.180	− 325.932	− 302.062
H_2O	2		− 198.334	− 193.676	− 188.919	− 169.037
N_2	7.524		+ 34.936	+ 38.405	+ 41.904	+ 56.137
CaO	1		− 577.926	− 572.321	− 566.671	− 543.628
$\Sigma\, n_i H_i$ products			−1386.948	−1334.306	−1281.087	−1063.451

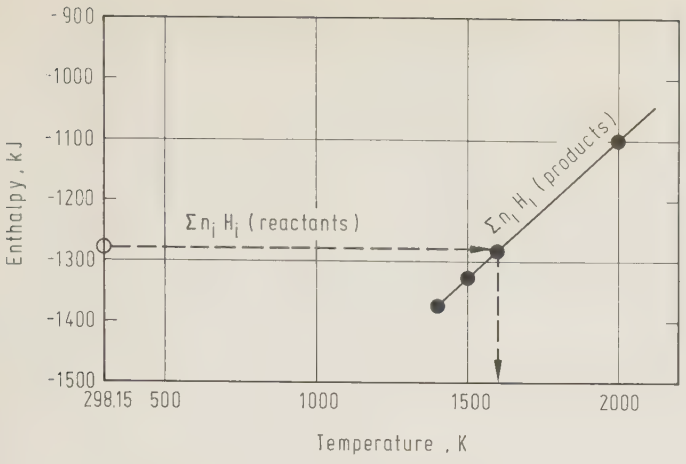

Fig. 7.1: Determination of the final temperature in an adiabatic process by plotting the enthalpies of reactants and products over the temperature range.
Reaction: $CH_4 + 2O_2 + 2\frac{79}{21}N_2 + CaCO_3 \rightarrow 2CO_2 + 2H_2O + 2\frac{79}{21}N_2 + CaO$

b) Adiabatic processes in systems with preheated reactants

T_f for the example in Section 7.1.3.a will be recalculated for the case that the air supply is preheated to 900 K, i.e. 7.524 mol N_2 and 2 mol O_2 are initially at 900 K. $H(900) = 18.222$ kJ mol^{-1} for N_2 and $H(900) = 19.241$ kJ mol^{-1} for O_2 so

$$\Sigma v_i H_i \text{ (reactants)} = -1281.794 + 175.584$$
$$= -1106.210 \text{ kJ}.$$

Linear interpolation between the sums of the enthalpies of the products at 1600 K and 2000 K reveals that $T_f = 1922$ K. This means that preheating the air supplied from 298.15 K to 900 K raises the temperature of the products from 1599 to 1922 K. This preheating can be achieved by indirect heat exchange between hot product gases. This is practised in the manufacture of **cement clinker**. The clinker is cooled in process air, which is thus preheated for the precalcination step. The next calculation example treats a simplified case of this type.

7.1.4 Enthalpy balance for heat exchange

Heating air by cooling a hot material:

Question:

How much air (in terms of its volume at 273.15 K and 1 bar) can be heated from 298.15 to 600 K when the heat is provided by the cooling of 1 t CaO from 1600 to 600 K at 1 bar?

Calculation:

The process mentioned above can be described by the following table:

Reactants:	CaO	N_2	O_2
n [mol]	x	0.79y	0.21y
T [K]	1600	298.15	298.15
H [kJ mol^{-1}]	−566.671	0	0
Products:	**CaO**	**N_2**	**O_2**
n [mol]	x	0.79y	0.21y
T [K]	600	600	600
H [kJ mol^{-1}]	−620.773	8.894	9.224

Since $\Delta H_f(298.15)$ is zero for N_2 and O_2 the following relation applies:

$$x[H(CaO,600) - H(CaO,1600)] + y[0.79H(N_2,600) + 0.21H(O_2,600)] = 0$$

With $M_r(CaO) = 56.077$ g mol^{-1} it follows that for 1 t (= 1000 kg) CaO, $x = 17.833 \times 10^3$ mol.

On substituting for x and the values of the enthalpy, the following equation is obtained for the enthalpy change in kJ:

$$-964\,801 + y(7.026 + 1.937) = 0$$

$$y = 107\,643 \text{ mol air.}$$

With $V = 22.711 \times 10^{-3}$ m^3/mol at 1 bar and 273.15 K the amount of air heated is 2444.7 m^3 related to 1 bar and 273.15 K.

7.1.5 Enthalpy change in a system with reactions

Hydrogen is to be heated to 4000 K. At this temperature H_2 is completely dissociated according to the following reaction:

$$H_2 \rightarrow 2H.$$

How much energy is necessary to heat H_2 from 298.15 to 4000 K?

The proportion of H^+ ions at 4000 K is negligibly small.

Solution:

Substance	H_2	H
T [K]	298.15	4000
H [kJ mol^{-1}]	0	294.946

$$\Delta H = 2 \times 294.946 - 0 = 589.892 \text{ kJ/mol } H_2.$$

Note:

Only 76.947 kJ are required to heat 1 mol argon from 298.15 to 4000 K (see Table for argon). The heat capacity and, hence, the enthalpy increment of a monatomic gas is less than it is for a diatomic gas. The diatomic gas can take up more energy on being heated. For this reason H_2 is often employed in plasma technology to increase the energy of the plasma gas beam. The recombination of H to H_2 is an exothermic process in which the energy of dissociation is "liberated". This energy also increases the temperature of the plasma beam.

The enthalpies of ionization of H and Ar

$$H \rightarrow H^+ + e^-$$

$$Ar \rightarrow Ar^+ + e^-$$

are about the same so that the larger energy uptake of hydrogen is also maintained on coupling with the ionization energy.

7.2 Exergy and entropy balance calculations

Exercise:

Exergy change occurring on cooling exhaust gas from 1000 to 400 K at 1 bar pressure

Exhaust gas composition (% by volume): 17% CO_2, 8% H_2O, 69% N_2, 6% O_2

Amount of exhaust gas: 1 m^3 at 1 bar and 273.15 K

Initial state 1 bar, 1000 K = T_1
Final state 1 bar, 400 K = T_2.

Additional information

Mole fraction: $x_i = n_i / \Sigma n_i$

$\Sigma n_i = pV/RT$

$V = 1$ m^3 related to 1 bar and 273.15 K

$R = 0.0831441$ m^3 bar^{-1} mol^{-1}.

Change in exergy

$$\Delta \varepsilon = \Sigma n_i (\Delta H - T_0 \Delta S)$$

$$\Delta H = \Sigma x_i [H_i(T_2) - H_i(T_1)] = \Sigma x_i \Delta H_i$$

$$\Delta S = \Sigma x_i [S_i(T_2) - S_i(T_1)] = \Sigma x_i \Delta S_i$$

$T_0 = 298.15$ K, $T_1 = 1000$ K, $T_2 = 400$ K.

The calculation process is summarized in the following table.

H [kJ mol^{-1}], S [J K^{-1} mol^{-1}].

$\Sigma x_i \Delta H_i = -20.741$ kJ mol^{-1}

$\Sigma x_i \Delta S_i = 31.287$ JK^{-1} mol^{-1}

$\Sigma n_i = 44.032$ mol

$\Delta \varepsilon = 44.032 [-20.741 \times 10^3 - 298.15 \times (-31.287)]$

$= -502.5$ kJ.

Gas	CO_2	H_2O	N_2	O_2	Σ
% by vol.	17	8	69	6	100
x	0.17	0.08	0.69	0.06	1
$H(T_1)$	−360.105	−215.827	21.463	22.703	
$H(T_2)$	−389.501	−238.375	2.971	3.025	
ΔH	−29.396	− 22.548	−18.492	−19.678	
$x\Delta H$	− 4.997	− 1.804	−12.759	− 1.181	−20.741
$S(T_1)$	269.280	252.86	228.171	243.578	
$S(T_2)$	225.291	198.910	200.181	213.871	
ΔS	− 43.989	− 33.950			
$x\Delta S$	− 7.478	− 2.716	−19.311	− 1.782	−31.287

This value represents the maximum work which could be done by performing the process in a reversible manner. On account of the irreversibility, the work done in a real process is less.

Note:

In the calculation the values of the standard entropies of the gases (at a pressure of 1 bar) were employed since the molar quantities and, hence, the partial pressures of the gaseous components remain constant on cooling.

7.3 Equilibrium calculations

7.3.1 Calculation of equilibrium constants of chemical reactions

a) Equilibrium constant of the reaction

$$C + H_2O = CO + H_2 \qquad (a)$$

at 1000, 1100 and 1200 K.

Equilibrium constant

$$K_a = P_{CO}P_{H_2}/(a_C P_{H_2O})$$

If $a_C = 1$ (in the presence of solid carbon) then

$$K_a = P_{CO}P_{H_2}/P_{H_2O}.$$

The following equation is employed for the calculation of K_a:

$$\log K_a = \Sigma \nu_i \log K_f(i).$$

The calculation is followed through in the next table (a).

The value of K is greater than 1 and increases with increasing temperature. The standard Gibbs energy of the reaction is negative in the temperature range from 1000 to 1200 K. The products CO and H_2 are accordingly the dominant equilibrium components in the gas phase.

b) Calculation of the equilibrium constant of the reaction

$$CO + H_2O = CO_2 + H_2 \qquad (b)$$

(water gas equilibrium)

at 1000, 1100 and 1200 K

$$K_b = P_{CO_2}P_{H_2}/(P_{CO}P_{H_2O})$$

$$\log K_b = \Sigma \nu_i \log K_f(i).$$

Data and results see in table (b)

(a)

Substances	C	H_2O	CO	N_2
ν	−1	−1	+1	+1

T [K]	log K_f				log K_a	K_a
	C	H_2O	CO	N_2		
1000	0	10.062	10.461	0	0.399	2.506
1100	0	8.888	9.927	0	1.039	10.940
1200	0	7.899	9.480	0	1.581	38.107

(b)

Substance	C	H_2O	CO_2	N_2
ν	−1	−1	+1	+1

T [K]	log K_f				log K_b	K_b
	C	H_2O	CO_2	N_2		
1000	10.461	10.066	20.675	0	0.148	1.406
1100	9.927	8.888	18.801	0	−0.014	0.968
1200	9.480	7.904	17.238	0	−0.146	0.715

Linear interpolation of $\log K_a = f(1/T)$ yields $K_a = 1$ at ca. $T = 1091$ K. Below this temperature the right-hand side of the equilibrium (products; CO_2, H_2) dominates and above this temperture the left-hand side (reactants; CO, H_2O) is dominant. If the system is in equilibrium at, say, 1000 K and the temperature is then raised to 1200 K then CO_2 and H_2 are consumed with the production of CO and H_2 until the system reaches the new equilibrium state.

7.3.2 Vapor pressure calculations

The vapor pressures of substances are most simply calculated with the aid of the $\log K_f$ values in the tables on the basis of the two-phase equilibria solid-gas and liquid-gas. For the evaporation of a substance A at temperature T:

$$\text{A (sol, liq)} = \text{A (gas)}$$

$$\log K = \log K_f\,(\text{A (gas)}) - \log K_f\,(\text{A (sol, liq)})$$

$$= \log [p\,(\text{A (gas)})/a\,(\text{A (sol, liq)})].$$

p is the vapor pressure and a the activity of A in the condensed phase.

In general, for the evaporation of pure substances

$$\log K = \Sigma \nu_i \log K_f(\text{i}) = \log p^\circ(\text{i}).$$

When elements in their reference phases evaporate congruently

$$\log p^\circ(\text{i}) = \log K_f(\text{i, gas}) \quad T \leq T_{bp}.$$

The vapor pressure reaches 1 bar at the boiling point:

$$p^\circ = 1 \text{ bar} \quad \text{at } T = T_{bp}.$$

Several gaseous species are produced when substances such as S, Te, PbO, etc. evaporate (e.g. S evaporates with the formation of S_1, S_2, ... S_8). Many substances dissociate into other compounds on evaporation. In such cases the vapor pressure or dissociation pressure can be calculated using the equation

$$\log K = \Sigma \nu_i K_f(\text{i}).$$

Example:

a) Vapor pressure of metals

$\text{Al (liq)} = \text{Al (gas)}, \quad T = 1500$ K

$\text{Pb (liq)} = \text{Pb (gas)}, \quad T = 1500$ K

$\text{Pb (liq)} = {}^1/_2\text{Pb}_2\text{ (gas)}, \quad T = 1500$ K

$\text{CCl}_4\text{ (liq)} = \text{CCl}_4\text{ (gas)}, \quad T = 300$ K

b) Dissociation pressure of ZnS at 1800 K

$$\text{ZnS (sol)} = \text{Zn (gas)} + {}^1/_2\text{S}_2\text{ (gas)} \qquad \text{(b)}$$

$$K_b = P_{Zn}(P_{S_2})^{1/2}, \quad P_{Zn} = 2P_{S_2}$$

Substance	T [K]	$\log K_f$	p° [bar]
Al (liq)	1500	0	
Al (gas)	1500	− 4.878	1.32×10^{-5}
Pb (liq)	1500	0	
Pb (gas)	1500	− 1.604	2.49×10^{-2}
Pb_2 (gas)	1500	− 4.977	1.05×10^{-5}
CCl_4 (liq)	300	10.814	
CCl_4 (gas)	300	10.080	0.185
ZnS (w, sol)	1800	− 1.009	($K_b = 0.098$)
Zn (gas)	1800	0	$p_{Zn} = 0.268$
S_2 (gas)	1800	0	$p_{S_2} = 0.134$

7.3.3 Equilibrium concentration of NO in hot air

A series of compounds is known in the N−O system, e.g. N_2O, NO, NO_2, N_2O_4, N_2O_5....N_xO_y. NO is produced by the reaction of N_2 and O_2 (thermal NO) at high temperatures. It is metastable in the atmosphere and can be transformed to NO_2 and other toxic compounds.

Exercise:

Calculation of the equilibrium concentration of NO in air at 1 bar pressure at the temperatures 1000, 1500 and 2000 K taking into account the species N_2, O_2 and NO.

Elucidation:

System: N − O

Components: N_2, O_2, NO (ideal gases)

Conditions: air, 79% N_2 and 21% O_2 by volume

$p_{N_2}/p_{O_2} = 79/21$

$p_{N_2} + p_{O_2} = 1$ bar

$T = 1000, 1500, 2000$ K.

Reaction:

$${}^1/_2\text{N}_2 + {}^1/_2\text{O}_2 = \text{NO}$$

$$K = p_{NO}/(p_{N_2}p_{O_2})^{1/2}$$

$$\log K = \log K_f(\text{NO}) - {}^1/_2\log K_f(\text{N}_2) - {}^1/_2\log K_f(\text{O}_2) = \log K_f(\text{NO}) - 0 - 0.$$

$$\log p_{NO} = \log K + {}^1/_2\log (p_{N_2} \times p_{O_2}) = \log K + {}^1/_2\log (0.79 \times 0.21).$$

vpm (vol. per million) of NO $= p_{NO} \times 10^6$.

Data and results of calculation

T [K]	log K_f(NO)	log p_{NO}	NO content [vpm]
1000	− 4.062	− 4.452	35.32
1500	− 2.487	− 2.877	1327.39
2000	− 1.699	− 2.089	8147.04

As can be seen, at temperatures above 1000 K the NO content increases rapidly. In order to prevent the formation of thermal NO in combustion processes it is necessary to

- employ low combustion temperatures, e.g. $T \leq 1200$ K
- employ as little excess air as possible for combustion so that the partial pressures of N_2 and O_2 in the combustion chamber are kept low (see equation for log p_{NO}).

7.3.4 Equilibrium concentration of NO in exhaust gases

Gas composition:

17% CO_2, 8% H_2O, 69% N_2, 6% O_2 (by volume).

Pressure = 1 bar

Temperatures: 1200 and 1500 K.

Assumptions:

The gas mixture is regarded as an ideal gas. The equilibrium concentrations of NO are calculated from the following equations:

$$^1/_2N_2 + {}^1/_2O_2 = NO$$

$$K = p_{NO}/(p_{N_2} \times p_{O_2})^{1/2}$$

$$\log p_{NO} = \log K + {}^1/_2 \log (p_{N_2} \times p_{O_2})$$

$$= \log K_f(NO) + {}^1/_2 \log (0.69 \times 0.06).$$

Calculation

T [K]	log K_f(NO)	NO content vpm
1200	− 3.275	108.02
1500	− 2.487	662.98

Note:

The equilibrium concentration of NO increases by more than a factor of 3 on raising the temperature by 300 K.

The gas composition chosen for the calculation corresponds approximately to that emitted by coal-fired power stations. The temperature of the exhaust gases as they leave the combustion chamber is about 1200 K for fluidized bed combustion and 1500 K for grate combustion. The composition of the exhaust gases from technical plants changes by a few percent on cooling. The NO content of untreated exhaust gases from coal combustion plants is about 500 to 600 ppm in the case of fluidized bed combustion and 700 to 1000 ppm after grate combustion. The exhaust gases from lignite combustion contain less NO. The nitrogen compounds contained in the fuel are of importance for NO formation in combustion processes. In addition, the same temperature is not maintained throughout the combustion chamber. The occurrence of local temperature peaks will increase the NO production considerably. This is the reason why calculated equilibrium concentrations are often lower than those actually measured in the exhaust gases from industrial combustion plants.

7.4 Equilibrium in simplified systems with several phases and components

7.4.1 Equilibrium in the C − CO − CO_2 system

Element system: C − O

Phases	*Components*
solid	C (graphite)
gas	CO, CO_2 (ideal gases)

This system has 2 independent variables according to the Gibbs phase rule:

$$f = 2 + 2 - 2 = 2,$$

e.g. p_{CO}, T or p_{CO}, p_{CO_2} etc.

Exercise:

Calculation of the proportion of CO in the CO − CO_2 equilibrium mixture as a function of temperature.

Reaction:

$$C + CO_2 = 2CO \text{ (Boudouard equilibrium)}$$

$$K = p_{CO}^2/p_{CO_2}$$

$$\log K = 2 \log K_f(CO) - \log K_f(CO_2) - [\log K_f(C) = 0].$$

Solution:

$$p_t = p_{CO} + p_{CO_2}$$

$$p_t = p_{CO} + p_{CO}^2/K$$

$$p_{CO}^2 + Kp_{CO} - Kp_t = 0$$

$$p_t = 1 \text{ bar}, \quad \text{vol \% CO} = 100 \times p_{CO}$$

$$\text{vol \% CO} = 100 \times K/2[(1 + 4/K)^{1/2} - 1].$$

The calculation with $\log K_f$ values is summarized in the following table.

In Fig. 7.2 p_{CO} is plotted as a function of T. The curve for the two-phase equilibrium where C_{sol} and the gas phase coexist is known in metallurgy as the Boudouard curve. At low temperatures the gas phase consists primarily of CO_2 and at higher temperatures mainly of CO. Consequently CO is not stable at room temperature and a pressure of 1 bar and should decompose with the formation of C and CO_2. However, CO exists at room temperature as a metastable gas. The decomposition of CO occurs at temperatures above 800 K, especially in the presence of catalytic substances such as metallic iron.

In accordance with Le Châtelier's principle, the CO content of the gas phase is reduced when the total pressure is increased at constant temperature, i.e. the Boudouard curve is displaced to the right. The displacement can be calculated with the aid of the equations given.

7.4.2 Predominance area diagram for the system Zn – O – C

System: Zn – O – C.

Components: ZnO (sol), Zn (liq, gas), CO (gas), CO_2 (gas).

T [K]	$\log K_f(CO_2)$	$\log K_f(CO)$	$\log K$	K	vol % CO
400	51.535	19.112	− 13.311	4.37×10^{-14}	2.20×10^{-5}
600	34.400	14.320	− 5.760	1.74×10^{-6}	0.013
700	29.501	12.948	− 3.605	2.483×10^{-4}	1.56
800	25.825	11.916	− 1.993	1.016×10^{-2}	9.59
900	22.965	11.109	− 0.747	0.179	34.30
1000	20.675	10.461	0.247	1.766	71.25
1100	18.801	9.927	1.053	11.298	92.44
1200	17.238	9.480	1.722	52.723	98.17
1400	14.780	8.772	2.764	580.764	99.83

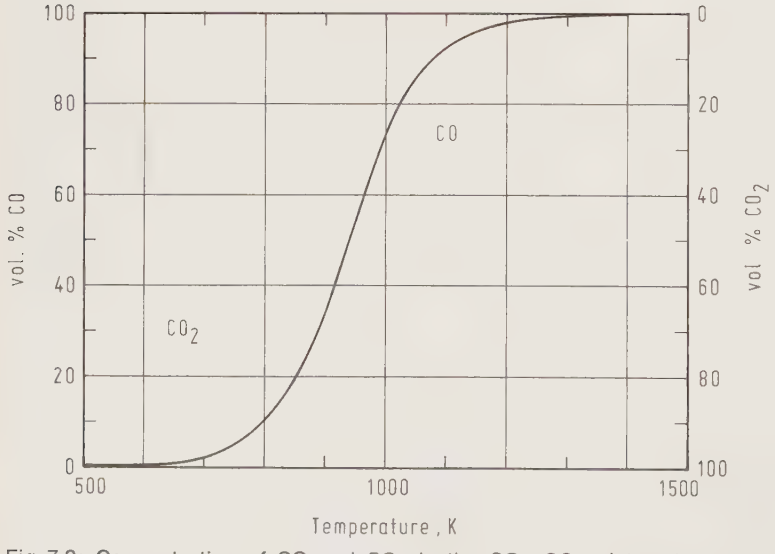

Fig. 7.2: Concentration of CO and CO_2 in the $CO - CO_2$ mixture in equilibrium with solid carbon (graphite) as a function of temperature at 1 bar.

Exercise:

Calculation of the equilibrium

$$ZnO + CO = Zn + CO_2$$

$$K = p_{CO_2}\, a_{Zn}/(p_{CO}\, a_{ZnO})$$

and representation of the regions of stability of ZnO and Zn by plotting $\log(p_{CO}/p_{CO_2})$ against $1000/T$ over the temperature range from 800 to 1800 K.

The basic equations are

$$\log K = \Sigma \nu_i K_f(i) = \log\, [p_{CO_2}\, a_{Zn}/(p_{CO}\, a_{ZnO})]$$

$$\log p_{CO}/p_{CO_2} = -\log K + \log a_{Zn}$$

$a_{ZnO} = 1$ for ZnO (sol)

$a_{Zn} = 1$ for Zn (pure liquid)

$a_{Zn} = p_{Zn}$ for Zn (gas).

The calculation is summarized in the following table.

Figure 7.3 illustrates a plot of $\log p_{CO}/p_{CO_2}$ against $1000/T$. The equilibrium lines have mainly been approximated by straight lines. The solid line with a bend at the boiling point of zinc is the coexistence line where Zn and ZnO exist in equilibrium together. Zinc is stable above this line and ZnO below it. Thus, the diagram indicates the regions of stability of Zn and ZnO under a gas phase comprising Zn, CO and CO_2.

The coexistence line ZnO/Zn (gas) applies to $p_{Zn} = 1$ bar. Its position changes with $+\log p_{Zn}$ according to the equation

$$\log\,(p_{CO}/p_{CO_2}) = -\log K + \log p_{Zn}.$$

This line is displaced 1 scale unit downwards when $p_{Zn} = 0.1$ bar.

Figure 7.3 also shows the position of the equilibrium calculated in the previous example (Boudouard equilibrium)

$$CO_2 + C = 2CO$$

T [K]	log K_f				log K	log (p_{CO}/p_{CO_2}) for $a_{Zn} = 1$
	ZnO	CO	Zn	CO_2		
800	17.612	11.916	0	25.825	− 3.703	3.703
1000	12.962	10.461	0	20.675	− 2.748	2.748
1200	9.777	9.480	0	17.238	− 2.019	2.019
1500	5.703	8.487	0	13.796	− 0.394	0.394
1800	3.017	7.812	0	11.499	+ 0.670	− 0.670

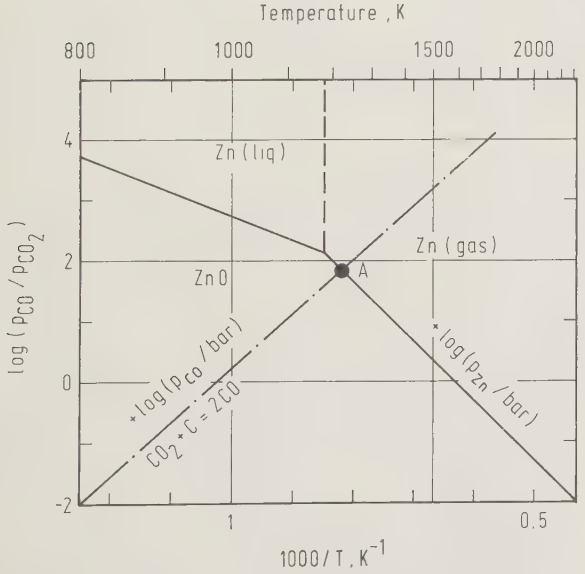

Fig. 7.3: Predominance area diagram for the system Zn−O−C. The line for the Boudouard equilibrium crosses the co-existence line for ZnO/Zn (gas) at the point A at unit pressures of CO and Zn (gas). When $T \geq T_A$ then ZnO can be reduced to Zn using solid carbon.

at $p = 1$ bar. This line is also displaced parallel downwards when p_{CO} is reduced.

The point of intersection A is of importance for the reduction of ZnO in the presence of solid carbon.

When $p_{Zn} + p_{CO} + p_{CO_2} = 1$ bar, i.e. $p_{Zn} < 1$ bar and $p_{CO} < 1$ bar, then it follows from the position of intersection A that the reduction of ZnO in the presence of solid carbon always leads to the formation of gaseous and not liquid zinc. If the gas produced, consisting of Zn, CO and CO_2 (less than Zn and CO), is cooled, then because of the position of the Boudouard line, reoxidation should take place to ZnO. However, the CO decomposition taking place during this process is inhibited kinetically, so that cooling the Zn–CO mixture yields liquid zinc.

7.4.3 Predominance area diagram for the system Zn–O–S

Exercise:

Calculation of the predominance area diagram for the system Zn–O–S in the $\log p = f(p_{CO_2})$ diagram at 1600 and 1900 K.

The following elements and compounds will be considered in the description of the equilibrium between the species: Zn (gas), ZnO (sol), ZnS (sol), O_2 (gas), S_2 (gas).

The equilibrium between S_2, O_2 and SO_2 also requires calculation at 1600 and 1900 K in order to explain the technical relevance of the equilibrium calculation.

Reactions between zinc species

$$Zn + {}^1/_2O_2 = ZnO \qquad (1)$$

$$K_1 = (p_{O_2})^{-1/2}(p_{Zn})^{-1}$$

$$Zn + {}^1/_2S_2 = ZnS \qquad (2)$$

$$K_2 = (p_{S_2})^{-1/2}(p_{Zn})^{-1}$$

$$ZnO + {}^1/_2S_2 = ZnS + {}^1/_2O_2 \qquad (3)$$

$$K_3 = (p_{O_2})^{1/2}(p_{S_2})^{-1/2}$$

Calculation of the equilibrium constants

$$\log K_1 = \log K_f(ZnO)$$

$$\log K_2 = \log K_f(ZnS)$$

$$\log K_3 = \log K_f(ZnS) - \log K_f(ZnO) = -\log K_1 + \log K_2.$$

Calculation of $\log p_{O_2}$ and $\log p_{S_2}$

$$\log (p_{O_2})_1 = -2 \log K_1 - 2 \log (p_{Zn})_1$$

$$\log (p_{S_2})_2 = -2 \log K_2 - 2 \log (p_{Zn})_2$$

$$\log (p_{O_2})_3 = 2 \log K_3 + \log (p_{S_2})_3.$$

The calculation is

T [K]	$\log K_1$	$\log K_2$	$\log K_3$
1600	4.692	2.340	− 2.352
1900	2.316	0.453	− 1.863

T [K]	$\log (p_{O_2})_1$ $p_{Zn} = 1$ bar	$\log (p_{S_2})_2$ $p_{Zn} = 1$ bar	$\log (p_{O_2})_3$ $p_{S_2} = 1$ bar
1600	− 9.384	− 4.680	− 4.704
1900	− 4.632	− 0.906	− 3.762

Equilibrium in the system S–O with the species S_2, O_2 and SO_2:

$$ {}^1/_2S_2 + O_2 = SO_2 \qquad (4)$$

$$K_4 = p_{SO_2}(p_{O_2})^{-1}(p_{S_2})^{-1/2}$$

$$\log K_4 = \log K_f(SO_2)$$

$$\log (p_{O_2})_4 = -\log K_4 - {}^1/_2 \log p_{S_2} + \log p_{SO_2}.$$

T [K]	$\log K_4$	$\log (p_{O_2})_4 + \log p_{S_2}$ at $p_{SO_2} = 1$ bar
1600	7.995	− 7.995
1900	6.136	− 6.136

Figure 7.4 shows the coexistence lines of Zn/ZnS, Zn/ZnO and ZnS/ZnO. The solid lines apply to $T = 1600$ K and the broken lines to $T = 1900$ K. At each temperature there is a point at which the three coexistence lines meet. This point where all three zinc-containing species coexist is known as a triple point. In contrast to the triple point in the phase diagram of H_2O, the triple point in the $p = f(T)$ diagram of the system Zn–O–S is not invariant. Its position changes with p_{Zn}.

It can be concluded from the position of the equilibrium line for SO_2 that ZnO is the product when ZnS is roasted in O_2 at 1600 K. The SO_2 content of the exhaust gases in technical processes is from 5 to 80% by volume. ZnO is the stable zinc

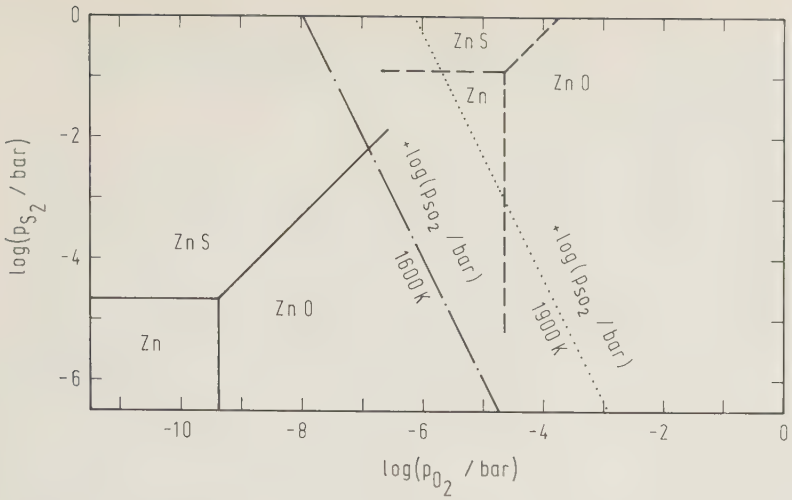

Fig. 7.4: Stability areas of the components in the system Zn – O – S at 1600 K and 1900 K with $p_{Zn} = 1$ bar. The equilibrium line for the reaction $^1/_2S_2 + O_2 = SO_2$ is plotted for $p_{SO_2} = 1$ bar

compound under these circumstances. In contrast the SO_2 line at 1900 K lies in the stability area of gaseous zinc. So roasting at 1900 K can yield zinc vapor as well as SO_2.

When zinc-containing copper concentrates are smelted in high temperature reactors (flash smelting, cyclone smelting) the temperatures rise appreciably over 2000 K. Zinc is, thus, transferred into the gaseous phase. In the case of cyclone smelting it is possible to separate most of the zinc by vaporization thereby simplifying the metallurgical steps that follow.

(I. Barin, M. Modigell, F. Sauert: Thermodynamics and Kinetics of Cyclone Smelting, in "Advances in Sulfide Smelting", Vol. 1, Basic Principles, H.Y. Sohn, D.B. George, A.D. Zunkel (editors), pp. 257 – 273, The Metallurgical Society of AIME, Warrendale, Pa., USA, 1983)

7.5 Electrochemical energy conversion, high temperature fuel cell

High temperature cells with solid electrolytes of zirconium dioxide have been investigated for the electrolysis of H_2O vapor and as fuel cells for the generation of electric power. Examples include the combustion of synthesis gas ($CO - H_2$ mixtures) in cells at temperatures of 1300 K.

The following equation must be considered in a discussion of the thermodynamic aspects of fuel cells

$$H_2 + {}^1/_2O_2 = H_2O \text{ (gas)}.$$

The following can be read from the table for H_2O (gas):

T [K]	ΔH_f kJ mol^{-1}	ΔG_f kJ mol^{-1}
298.15	– 241.826	– 228.620
1300	– 249.475	– 175.934

The formation reaction is strongly exothermic at both temperatures. The maximum work that must be done to the system to cause electrolysis is very much less at 1300 K than at 298.15 K. The work that the system can do, on the other hand, is less at the higher temperature.

The maximum efficiency of the fuel cell $\varepsilon_{max} = \Delta G_r/\Delta H_r$ is 94.5% at 298.15 K and 70.5% at 1300 K. Practical efficiencies are in the region of 45 to 60%.

However, these chemical thermodynamic considerations are not decisive for the technical exploitation of high temperature fuel cells. The decisive factors are:

- Decrease in the electrokinetically determined overvoltage so that smaller losses occur in comparison with low temperature operation and, thus, higher efficiencies are obtained.
- Direct utilization of the fuels which are produced at high temperatures (steam from condensers, H_2 and CO from coal gasification) and, hence, avoidance of the losses inevitable in irreversible heat-exchange processes.

Calculation of the cell voltage

A high temperature solid electrolyte fuel cell (SOFC) will be considered now. Modern SOFC technology employs calcia-stabilized zirconia as support tube and yttria-stabilized zirconia as solid electrolyte. In addition, special oxide ceramic materials are employed as electrodes and interconnection materials. These materials and the solid electrolyte are deposited as thin layers on the support tube by electrochemical vapor deposition. The emf of the cell when burning H_2 with O_2 can be calculated from

$$H_2 + {}^1\!/_2 O_2 = H_2O \ (r)$$

$$K_r = p_{H_2O}(p_{H_2})^{-1}(p_{O_2})^{1/2}$$

$$E_0 = -\Delta G_r/(zF) = RT/(zF) \ln K_r.$$

For $T = 1300$ K with

$$\Delta G_r = \Delta G_f(H_2O) = -175.934 \text{ kJ mol}^{-1}$$

and

$$F = 96484.6\ C \text{ mol}^{-1} = 96484.6 \text{ J}V^{-1} \text{ mol}^{-1}$$

$$E_0 = 0.912 \text{ V}.$$

In comparison, the cell voltage is displaced to 1.229 V at 298.15 K with

$$\Delta G_r = -237.141 \text{ kJ mol}^{-1} \quad \text{for } H_2O \text{ (liquid)}.$$

If air is employed as oxidant, the partial pressure of oxygen at the oxidation electrode (anode) can be taken as 0.21 bar. The partial pressure of H_2 at the fuel electrode (cathode) falls as a result of H_2O formation. Under equilibrium conditions the O_2 partial pressure at the cathode is given by

$$p_{O_2} = [(p_{H_2O}/p_{H_2})/K_r]^2.$$

This, together with

$$\log K = \log K_f(H_2O) = 7.069 \text{ at } T = 1300 \text{ K}$$

yields

$$p_{O_2} = 7.278 \times 10^{-15} \text{ bar for } p_{H_2O}/p_{H_2} = 1$$

or

$$p_{O_2} = 10^{-17} \text{ bar for } p_{H_2O}/p_{H_2} = 0.03707.$$

The latter corresponds to the state where $p_{H_2} + p_{H_2O} = 1$ bar with 3.57% H_2O by volume in the H_2-H_2O mixture in the cathode space. The ratio of the O_2 partial pressures p_{O_2} (anode)/p_{O_2} (cathode) is, thus, of the order of 10^{13} to 10^{16}. If the latter value is substituted into the Nernst equation then for the open cell circuit

$$E = (RT/2F) \times [\ln (10^{16})^{1/2}]$$

$$= 0.056 \times 18.421$$

$$= 1.032 \text{ V}.$$

The cell potential is less when current is flowing. A cell voltage of ca. 0.5 V has been measured at a current density of 400 mA/cm^2.

References for fuel cells

1. H. Rickert: Elektrochemie fester Stoffe, Springer-Verlag, Berlin, 1973.
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5. W. Feduska and A. O. Isenberg: Hightemperature solid oxide fuel cell – Technical Status, I. Power Sources, *10* (1983) 89–102.
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7.6 The calculation of equilibria in multi-phase, multicomponent systems

The calculation of the equilibria in systems with several elements and phases requires the employment of suitable computer methods.

Consider, for instance, the system C–H–O, even if the equilibrium components are limited to CH_4, CO, CO_2, H_2 and H_2O, when the total pressure p, the temperature and two stoichiometric parameters ($\Sigma n_H/\Sigma n_C$, $\Sigma n_O/\Sigma n_C$) are known, the following equations apply:

$$p = p_{CH_4} + p_{CO} + p_{CO_2} + p_{H_2} + p_{H_2O} \qquad (1)$$

$$CO + H_2O = CO_2 + H_2 \quad (a)$$

$$K_a = p_{CO_2}p_{H_2}/(p_{CO}p_{H_2O}) \qquad (2)$$

$$CH_4 + H_2O = CO + 3H_2 \quad (b)$$

$$K_b = p_{CO}p^3_{H_2}/(p_{CH_4}p_{H_2O}) \qquad (3)$$

$$\Sigma n_H/\Sigma n_C = (4p_{CH_4} + 2p_{H_2} + 2p_{H_2O})/(p_{CH_4} + p_{CO} + p_{CO_2}) \qquad (4)$$

$$\Sigma n_O/\Sigma n_C = (p_{CO} + 2p_{CO_2} + p_{H_2O})/(p_{CH_4} + p_{CO} + p_{CO_2}). \qquad (5)$$

The solution of these nonlinear systems of equations by the established methods of numerical mathematics with the aid of a computer program yields the partial pressures of the gaseous components. If the system is enlarged to include components such as C_{sol} (solid carbon), N_2 etc.

then it is necessary to set up and solve a new system of equations. The amount of calculation involved increases as the number of components increases [1].

However, computer programs are available nowadays which are capable of calculating equilibrium states for given element combinations and equilibrium parameters [2–5].

The data bank and computing system EQUITHERM [5] contains the computing program SOLGASMIX [4] coupled with the data set published in these tables. EQUITHERM allows the calculation of equilibria using presonal computers in systems of up to 15 elements and 20 phases (up to a total of 120 species).

The computer program SOLGASMIX [4] calculates the equilibria according to the principle of Gibbs energy minimisation at a constant pressure and temperature.

The total Gibbs energy of a system is given by

$$G = \Sigma n_i \mu_i$$

where n_i represents the number of moles of substance and μ_i their chemical potentials. The following relations apply:

for gas mixtures

$$\mu = \mu_i^\circ + RT \ln p + RT \ln x_i$$

for condensed phases

$$\mu_i = \mu_i^\circ + RT \ln \gamma_i + RT \ln x_i$$

for stoichiometrically composed pure solid substance

$$\mu_i = \mu_i^\circ.$$

When p and T are given it is still necessary to take account of further restrictions depending on the masses of the elements, which are, in general, formulated as follows:

$$\Sigma n_{\varepsilon ij} n_i = b_j.$$

Where $n_{\varepsilon ij}$ is the number of moles of the element j in one mole of the species i, n_i is the number of moles of species i and b_j is the total number of moles of element j in the system. The introduction of the Lagrangian multiplier λ with the associated conditions yields the equations:

for gases

$$\mu_i^\circ + RT \ln p + RT \ln x_i - \Sigma n_{\varepsilon ij} \lambda_j = 0$$

for mixtures in condensed phase

$$\mu_i^\circ + RT \ln \gamma_i + RT \ln x_i - \Sigma n_{\varepsilon ij} \lambda_j = 0$$

for stoichiometric phases in the condensed state

$$\mu_i^\circ - \Sigma n_{\varepsilon ij} \lambda_j = 0.$$

These relations lead, on expansion in a Taylor series around an estimated equilibrium composition, to a set of linear equations. The number of unknowns is reduced to the number of elements and phases assumed to be present in the equilibrium. The solution approximates to the Gibbs energy surface on application of an iteration algorithm.

References for Section 7.6

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2. S. Gordon and B. J. McBride: Computer Program for Calculation of Complex Chemical Equilibrium Compositions, Rocket Performance, Incident and Reflected Shocks and Chapman-Jonquet Detonations, NASA SP-273, 1971, 250 pp.
3. R. Gautam and W. D. Seider: Computation of Phase and Chemical Equilibrium, AICHE J., *25* (1979) 991–1015.
4. G. Eriksson: SOLGASMIX, a computer program for calculation of equilibrium compositions in multi-phase systems, Chem. S. *8* (1975) 100–103.
5. I. Barin, G. Eriksson, et al.: EQUITHERM, Datenbank und Programm für thermodynamische Berechnungen, VCH Verlag, Weinheim, 1989.

Part V
Information on the Tables

8 Fundamental constants and conversion factors

8.1 Fundamental constants

Symbol	Value	Unit	Quantity
e	1.602189×10^{-19}	C	Elementary charge
F	9.648456×10^{4}	C mol^{-1}	Faraday constant
h	6.662176×10^{-34}	J s	Planck constant
k	1.380662×10^{-23}	J K^{-1}	Boltzmann constant
N_A	6.022×10^{23}	mol^{-1}	Avogadro number
R	8.31441	J K^{-1} mol^{-1}	Molar gas constant
R	83.1441	cm^3 bar^{-1} mol^{-1}	Molar gas constant
0°C	273.15	K	Ice point
1 cal	4.184	J	Thermochemical calorie
1 bar	10^5	Pa	Pressure
1 atm	1.01325	bar	
	0.101325	MPa	

8.2 Conversion factors for energy units (from *NBS Tables*)

	$\frac{J}{mol}$	$\frac{cal}{mol}$	$\frac{cm^3\,atm}{mol}$	$\frac{cm^3\,bar}{mol}$	$\frac{kWh}{mol}$	$\frac{Btu}{lb\text{-}mol}$	$\frac{eV}{molecule}$
$1\,\frac{J}{mol}$	1	0.2390057	9.86923	10	2.7778×10^{-7}	0.4299	1.03635×10^{-5}
$1\,\frac{cal}{mol}$ thermochemical	4.184	1	41.2929	41.84	1.1622×10^{-6}	1.7988	4.33645×10^{-5}
$1\,\frac{cm^3\,atm}{mol}$	0.101325	2.42173×10^{-2}	1	1.01325	2.8146×10^{-8}	0.04356	4.33645×10^{-5}
$1\,\frac{cm^3\,bar}{mol}$	0.1	2.3901×10^{-2}	0.986923	1	2.7778×10^{-8}	0.04299	1.03641×10^{-6}
$1\,\frac{kWh}{mol}$	3.6×10^{-6}	860421.	3.55×10^{7}	3.6×10^{7}	1	1.5477×10^{-6}	37.3107
$1\,\frac{Btu}{lb\text{-}mol}$ (I.T.)	2.326	0.5559	22.9558	23.26	6.461×10^{-7}	1	2.41069×10^{-5}
$1\,\frac{eV}{molecule}$	$\frac{96484.6}{(=F)}$	23060.4	952253.	9.6487×10^{5}	2.6802×10^{-2}	41482.0	1

8.3 Conversions for entropies of gases (from *JANAF Tables*)

	S^0 1 bar $J\,K^{-1}\,mol^{-1}$	S' 1 atm $cal\,K^{-1}\,mol^{-1}$	S'' 1 atm $J\,K^{-1}\,mol^{-1}$
S^0 1 bar $J\,K^{-1}\,mol^{-1}$	S^0	$4.184\,(S' + 0.026157)$	$S'' + 0.109442$
S'' 1 atm $J\,K^{-1}\,mol^{-1}$	$S^0 - 0.109442$	$4.184 \times S'$	S''
S''' 1 bar $cal\,K^{-1}\,mol^{-1}$	$S^0/4.184$	$S' + 0.026157$	$\dfrac{S'' + 0.109442}{4.184}$
S' 1 atm $cal\,K^{-1}\,mol^{-1}$	$\dfrac{S^0 - 0.109442}{4.184}$	S'	$S''/4.184$

8.4 Relative atomic masses of the elements based on $A_r = 12$ for ^{12}C

Symbol	Atomic number	Relative atomic mass	Symbol	Atomic number	Relative atomic mass
Ac	89	227.0278	N	7	14.00674
Ag	47	107.8682	Na	11	22.989768
Al	13	26.981539	Nb	41	92.90638
Am	95	243.0614	Nd	60	144.24
Ar	18	39.948	Ne	10	20.1797
As	33	74.92159	Ni	28	58.69
Au	79	196.96654	Np	93	237.0482
B	5	10.811	O	8	15.9994
Ba	56	137.327	Os	76	190.2
Be	4	9.012182	P	15	30.973762
Bi	83	208.98037	Pa	91	231.0359
Br	35	79.904	Pb	82	207.2
C	6	12.011	Pd	46	106.42
Ca	20	40.078	Pm	61	145.9151
Cd	48	112.411	Pr	59	140.90765
Ce	58	140.115	Pt	78	195.08
Cl	17	35.4527	Pu	94	244.0642
Co	27	58.93320	Ra	88	226.0254
Cr	24	51.9961	Rb	37	85.4678
Cs	55	132.90543	Re	75	186.207
Cu	29	63.546	Rh	45	102.90550
D	1	2.014102	Rn	86	222.0176
Dy	66	162.50	Ru	44	101.07
e^-		0.00054858	S	16	32.066
Er	68	167.26	Sb	51	121.75
Eu	63	151.965	Sc	21	44.955910
F	9	18.9984032	Se	34	78.96
Fe	26	55.847	Si	14	28.0855
Ga	31	69.723	Sm	62	150.36
Gd	64	157.25	Sn	50	118.710
Ge	32	72.61	Sr	38	87.62
H	1	1.00794	Ta	73	180.9479
He	2	4.002602	Tb	65	158.92534
Hf	72	178.49	Tc	43	98.9063
Hg	80	200.59	Te	52	127.60
Ho	67	164.93032	Th	90	232.0381
In	49	114.82	Ti	22	47.88
Ir	77	192.22	Tl	81	204.3833
J	53	126.90447	Tm	69	168.93421
K	19	39.0983	U	92	238.0289
Kr	36	83.80	V	23	50.9415
La	57	138.9055	W	74	183.85
Li	3	6.941	Xe	54	131.29
Lu	71	174.967	Y	39	88.90585
Mg	12	24.3050	Yb	70	173.04
Mn	25	54.93805	Zn	30	65.39
Mo	42	95.94	Zr	40	91.224

Part VI
Indexes

9 Symbols and abbreviations used in the tables

AM	Amorphous
BPT	Boiling point in K, p (gas) = 1 bar
C_p	C_p°, Heat capacity at 1 bar
ΔG_f	ΔG_f°, Gibbs energy of formation from the elements in their reference phases
ΔH_f	ΔH_f°, Enthalpy of formation from the elements in their reference phases
DPT	Decomposition point in K, p = 1 bar
G	G°, Gibbs energy
$-(G-H298)/T$	$-[G^\circ(T) - \Delta H_f^\circ(298.15)]/T = -Gef$, Gibbs energy function (free enthalpy function)
GAS	Ideal gas
H	H°, Enthalpy
L	Transition enthalpy in kJ/mol given as Remark at the bottom of the tables
LIQ	Liquid
$\log K_f$	$\log K_f^\circ$, Logarithm of the equilibrium constant of formation from the elements in their reference phases
MPT	Melting point in K at 1 bar
NBT	Normal boiling point in K, p (gas) = 1 atm
NDPT	Normal decomposition point in K, p = 1 atm
NSPT	Normal sublimation point in K, p (gas) = 1 atm
S	S°, Entropy
SOL	Solid crystalline
SOL-A	Solid crystalline-α
SOL-B	Solid crystalline-β
SOL-C	Solid crystalline-γ
SOL-D	Solid crystalline-δ
SOL-1	Solid crystalline-I
SOL-2	Solid crystalline-II
SPT	Sublimation point in K, p (gas) = 1 bar
TPT	Transition point in K at 1 bar
298	298.15

10 Reference phases of elements at 1 bar

Phase 1 is the reference phase at $T = 298.15$ K.
$T_1, T_2 \ldots$ = transition temperature in K. Non-specificed gases are monatomic

Symbol	Phase 1	T_1	Phase 2	T_2	Phase 3	T_3	Phase 4	T_4	Phase 5	T_5	Phase 6
Ag	SOL	1233.95	LIQ	2433	GAS						
Al	SOL	933.45	LIQ	2790.812	GAS						
Am	SOL-A	923.	SOL-B	1350.	SOL-C	1449	LIQ				
Ar	GAS										
As	SOL-A	1407	GAS (As_2)								
Au	SOL	1337.58	LIQ	3127.	GAS						
B	SOL-B	4139.449	GAS								
Ba	SOL	1002.	LIQ	2167.	GAS						
Be	SOL	1560.	LIQ	2741.437	GAS						
Bi	SOL	544	LIQ	1934.	GAS						
Br_2	LIQ	332.503	GAS (Br_2)								
C	SOL										
Ca	SOL-A	720	SOL-B	1112	LIQ	1755	GAS				
Cd	SOL	594	LIQ	1039	GAS						
Ce	SOL-C	999	SOL-D	1071	LIQ	3695	GAS				
Cl_2	GAS (Cl_2)										
Co	SOL-A	700	SOL-B	1768	LIQ	3198	GAS				
Cr	SOL	2130	LIQ	2942.	GAS						
Cs	SOL	301.55	LIQ	947.967	GAS						
Cu	SOL	1358	LIQ	2843.261	GAS						
Dy	SOL-A	1657	SOL-B	1682	LIQ	2831	GAS				
e^-	GAS										
Er	SOL	1795	LIQ	3132	GAS						
Eu	SOL	1090	LIQ	1798	GAS						
F_2	GAS (F_2)										
Fe	SOL-A	1042	SOL-B	1184	SOL-C	1665	SOL-D	1809	LIQ	3132	GAS
Ga	SOL	302.80	LIQ	2475	GAS						

Gd	SOL-A	1533	SOL-B	1585	LIQ	3535	GAS				
Ge	SOL	1210.4	LIQ	3104	GAS						
H_2	GAS (H_2)										
He	GAS										
Hf	SOL-A	2013	SOL-B	2500	LIQ	4871	GAS				
Hg	LIQ	629.3	GAS								
Ho	SOL-A	1701	SOL-B	1743	LIQ	2964	GAS				
In	SOL	429.76	LIQ	2343	GAS						
Ir	SOl	2716	LIQ	4697	GAS						
I_2	SOL	386.75	LIQ	457.666	GAS (I_2)						
K	SOL	336.35	LIQ	1039.54	GAS						
Kr	GAS										
La	SOL-A	550	SOL-B	1134	SOL-C	1193	LIQ	3726	GAS		
Li	SOL	453.69	LIQ	1620.12	GAS						
Lu	SOL	1936.	LIQ	3664.	GAS						
Mg	SOL	922	LIQ	1361	GAS						
Mn	SOL-A	980	SOL-B	1360	SOL-C	1410	SOL-D	1517	LIQ	2332	GAS
Mo	SOL	2897	LIQ	4978	GAS						
N_2	GAS (N_2)										
Na	SOL	370.98	LIQ	1170.52	GAS						
Nb	SOL	2740	LIQ	5013	GAS						
Nd	SOL-A	1128	SOL-B	1289	LIQ	3337	GAS				
Ne	GAS										
Ni	SOL	1726	LIQ	3184	GAS						
Np	SOL-A	553	SOL-B	849	SOL-C	912	LIQ	4352.44	GAS		
O_2	GAS (O_2)										
Os	SOL	3300	LIQ	5281	GAS						
P	SOL-A white	317.30	LIQ	1180.008	GAS (P_2)						
Pa	SOL-A	1443	SOL-B	1845	LIQ	2500	GAS				
Pb	SOL	600.6	LIQ	2019.022	GAS						
Pd	SOL	1825	LIQ	3234	GAS						

Symbol	Phase 1	T_1	Phase 2	T_2	Phase 3	T_3	Phase 4	T_4	Phase 5	T_5	Phase 6
Pr	SOL-A	1068	SOL-B	1204	LIQ	3780	GAS				
Pt	SOL	2045	LIQ	4096	GAS						
Pu	SOL-A	395	SOL-B	480	SOL-C	588 753	SOL-D SOL-E	730 913	SOL-D1 LIQ	753 3498	 GAS
Rb	SOL	312.65	LIQ	970.385	GAS						
Re	SOL	3453	LIQ	5864	GAS						
Rh	SOL	2233	LIQ	3967.	GAS						
Rn	GAS										
Ru	SOL	2523	LIQ	4419	GAS						
S	SOL-Rh. orthorh.	368.30	SOL-Mo. monocl.	388.36	LIQ	882.117	GAS (S_2)				
Sb	SOL	904	LIQ	1891	GAS (Sb_2)						
Sc	SOL-A	1608	SOL-B	1812	LIQ	3101	GAS				
Se	SOL-G grey	493	LIQ	958	GAS (Se_2)						
Si	SOL	1685	LIQ	3504.616	GAS						
Sm	SOL-A	1190	SOL-B	1345	LIQ	2061	GAS				
Sn	SOL-B white	505.06	LIQ	2873	GAS						
Sr	SOL-A	820.	SOL-C	1050	LIQ	1685.492	GAS				
Ta	SOL	3287	LIQ	5726	GAS						
Tb	SOL-A	1560	SOL-B	1630	LIQ	3492	GAS				
Tc	SOL	2473	LIQ	4904.638	GAS						
Te	SOL	722.65	LIQ	1327	GAS (Te_2)						
Th	SOI-A	1636	SOL-B	2028	LIQ	5056	GAS				
Ti	SOL-A	1166	SOL-B	1939	LIQ	3630.956	GAS				
Tl	SOL-A	507	SOL-B	577	LIQ	1744	GAS				
Tm	SOL	1818	LIQ	2217	GAS						
U	SOL-A	941	SOL-B	1048	SOL-C	1405	LIQ	4402	GAS		

V	SOL	2175	LIQ	3679	GAS		
W	SOL	3680	LIQ	5931	GAS		
Xe	GAS						
Y	SOL-A	1752	SOL-B	1799	LIQ	3607	GAS
Yb	SOL-A	1033	SOL-B	1097	LIQ	1465	GAS
Zn	SOL	692.655	LIQ	1179	GAS		
Zr	SOL-A	1135	SOL-B	2125	LIQ	4702.633	GAS

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12 List of chemical symbols and names of substances in the order of tabulation (Formulae index)

Formula	Name	Page
Ag	SILVER	1
Ag[g]	SILVER (GAS)	2
Ag3AsO4	SILVER ARSENATE	3
AgBr	SILVER BROMIDE	3
AgBr[g]	SILVER BROMIDE (GAS)	4
AgBrO3	SILVER BROMATE	4
AgCN	SILVER CYANIDE	5
Ag2CO3	SILVER CARBONATE	5
AgCl	SILVER CHLORIDE	6
AgCl[g]	SILVER CHLORIDE (GAS)	7
AgClO3	SILVER CHLORATE	7
Ag2CrO4	SILVER CHROMATE	8
AgF	SILVER FLUORIDE	8
AgF[g]	SILVER FLUORIDE (GAS)	9
AgI	SILVER IODIDE	10
AgI[g]	SILVER IODIDE (GAS)	11
AgNO3	SILVER NITRATE	11
Ag2O	SILVER OXIDE	12
AgP2	SILVER DIPHOSPHIDE	12
AgP3	SILVER TRIPHOSPHIDE	13
Ag2S	SILVER SULFIDE	13
Ag2SO4	SILVER SULFATE	14
Ag2Se	SILVER SELENIDE	15
Ag2Te	SILVER TELLURIDE	16
Ag2WO4	SILVER TUNGSTATE	16
Al	ALUMINIUM	17
Al[g]	ALUMINIUM (GAS)	18
AlAs	ALUMINIUM ARSENIDE	19
AlAsO4	ALUMINIUM ARSENATE	19
AlB2	ALUMINIUM DIBORIDE	20
AlB12	ALUMINIUM DODECABORIDE	21
AlBr[g]	ALUMINIUM MONOBROMIDE (GAS)	22
AlBr3	ALUMINIUM BROMIDE	23
AlBr3[g]	ALUMINIUM BROMIDE (GAS)	24
Al2Br6[g]	DIALUMINIUM HEXABROMIDE (GAS)	25
Al4C3	TETRAALUMINIUM TRICARBIDE	26
Al2Ca	2-ALUMINIUM CALCIUM	27
Al4Ca	4-ALUMINIUM CALCIUM	27
Al2Ce	2-ALUMINIUM CERIUM	28
Al4Ce	4-ALUMINIUM CERIUM	28
AlCl[g]	ALUMINIUM MONOCHLORIDE (GAS)	29
AlCl2[g]	ALUMINIUM DICHLORIDE (GAS)	30
AlCl3	ALUMINIUM CHLORIDE	30
AlCl3[g]	ALUMINIUM CHLORIDE (GAS)	31
Al2Cl6[g]	DIALUMINIUM HEXACHLORIDE (GAS)	32
AlCl3*6H2O	ALUMINIUM CHLORIDE HEXAHYDRATE	32
AlCo	ALUMINIUM COBALT	33
Al5Co2	5-ALUMINIUM 2-COBALT	33
AlF[g]	ALUMINIUM MONOFLUORIDE (GAS)	34
AlF2[g]	ALUMINIUM DIFLUORIDE (GAS)	35
AlF3	ALUMINIUM FLUORIDE	36
AlF3[g]	ALUMINIUM FLUORIDE (GAS)	37
Al2F6[g]	DIALUMINIUM HEXAFLUORIDE (GAS)	38
AlH3	ALUMINIUM HYDRIDE (HEXAGONAL)	38
AlI3	ALUMINIUM IODIDE	39
AlI3[g]	ALUMINIUM IODIDE (GAS)	39
Al2I6[g]	DIALUMINIUM HEXAIODIDE (GAS)	40
Al2La	2-ALUMINIUM LANTHANUM	41
AlLi	ALUMINIUM LITHIUM	41
AlN	ALUMINIUM NITRIDE	42
AlNi	ALUMINIUM NICKEL	42
AlNi3	ALUMINIUM 3-NICKEL	43
Al3Ni	3-ALUMINIUM NICKEL	43
Al3Ni2	3-ALUMINIUM 2-NICKEL	44
AlO[g]	ALUMINIUM MONOXIDE (GAS)	44
AlO2[g]	ALUMINIUM DIOXIDE (GAS)	45
Al2O[g]	DIALUMINIUM OXIDE (GAS)	46
Al2O2[g]	DIALUMINIUM DIOXIDE (GAS)	47
Al2O3	ALUMINIUM OXIDE (ALPHA,CORUNDUM)	48
Al2O3[C]	ALUMINIUM OXIDE (GAMMA)	49
Al2O3[D]	ALUMINUIM OXIDE (DELTA)	50
Al2O3[K]	ALUMINIUM-OXIDE (KAPPA)	51
Al4B2O9	4-ALUMINIUM 2-BORON 9-OXIDE	52
Al18B4O33	18-ALUMINIUM 4-BORON 33-OXIDE	52
AlOCl	ALUMINIUM CHLORIDE OXIDE	53
AlOCl[g]	ALUMINIUM CHLORIDE OXIDE (GAS)	53
AlOF[g]	ALUMINIUM FLUORIDE OXIDE (GAS)	54
AlOF2[g]	ALUMINIUM DIFLUORIDE OXIDE (GAS)	55
Al(OH)3	ALUMINIUM HYDROXIDE (AMORPHOUS)	55
Al2O3*H2O	DIASPORE	56
Al2O3*H2O[B]	BOEHMITE	56
Al2O3*3H2O	GIBBSITE	57
Al4Mg2Si5O18	CORDIERITE	57
Al2SiO5	ALUMINIUM SILICATE (KYANITE)	58
Al2SiO5[A]	ALUMINIUM SILICATE (ANDALUSITE)	59
Al2SiO5[S]	ALUMINIUM SILICATE (SILLIMANITE)	60
Al6Si2O13	MULLITE	61
Al2Si2O7*2H2O	KAOLINITE	61
Al2Si2O7*2H2O[D]	DICKITE	62
Al2Si2O7*2H2O[H]	HALLOYSITE	62
Al2TiO5	DIALUMINIUM TITANIUM PENTAOXIDE	63
AlP	ALUMINIUM PHOSPHIDE	64
AlPO4	ALUMINIUM PHOSPHATE	65
AlS[g]	ALUMINIUM MONOSULFIDE (GAS)	66
Al2S3	ALUMINIUM SULFIDE	67
Al2(SO4)3	ALUMINIUM SULFATE	67
AlSb	ALUMINIUM ANTIMONY	68
Al2Se2[g]	DIALUMINIUM DISELENIDE (GAS)	69
Al2Se3	ALUMINIUM SELENIDE	69
AlTe[g]	ALUMINIUM MONOTELLURIDE (GAS)	70
Al2Te3	ALUMINIUM TELLURIDE	70
Al3Th	3-ALUMINIUM THORIUM	71
AlTi	ALUMINIUM TITANIUM	71
Al3Ti	3-ALUMINIUM TITANIUM	72
Al2U	2-ALUMINIUM URANIUM	72
Al3U	3-ALUMINIUM URANIUM	73
Al4U	4-ALUMINIUM URANIUM	73
Am	AMERICIUM	74
Am[g]	AMERICIUM (GAS)	75
Ar[g]	ARGON (GAS)	76
As	ARSENIC	77
As[g]	ARSENIC (GAS)	77
As2[g]	ARSENIC (GAS)	78
As3[g]	ARSENIC (GAS)	78
As4[g]	ARSENIC (GAS)	79
AsBr3[g]	ARSENIC BROMIDE (GAS)	79

Formula	Name	Page
AsCl3	ARSENIC CHLORIDE	80
AsCl3[g]	ARSENIC CHLORIDE (GAS)	80
AsF3	ARSENIC FLUORIDE	81
AsF3[g]	ARSENIC FLUORIDE (GAS)	81
AsF5[g]	ARSENIC PENTAFLUORIDE (GAS)	82
AsH3[g]	ARSENIC HYDRIDE	83
AsI3	ARSENIC IODIDE	83
AsI3[g]	ARSENIC IODIDE (GAS)	84
AsO[g]	ARSENIC MONOXIDE (GAS)	84
As2O3	ARSENIC OXIDE (CLAUDETITE)	85
As2O3[A]	ARSENIC OXIDE (ARSENOLITE)	85
As2O5	DIARSENIC PENTAOXIDE	86
As4O6[g]	TETRAARSENIC HEXAOXIDE (GAS)	86
AsS[g]	ARSENIC MONOSULFIDE (GAS)	87
As2S2	DIARSENIC DISULFIDE	87
As2S3	ARSENIC SULFIDE	88
As4S4	TETRAARSENIC TETRASULFIDE	88
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CuFe2O4	COPPER DIIRON TETRAOXIDE	487
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Cu3P	TRICOPPER PHOSPHIDE	489
CuS	COPPER SULFIDE	489
CuS[g]	COPPER SULFIDE (GAS)	490
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CuSO4	COPPER SULFATE	492
Cu2SO4	DICOPPER SULFATE	492
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CuSO4*3H2O	COPPER SULFATE TRIHYDRATE	493
CuSO4*5H2O	COPPER SULFATE PENTAHYDRATE	494
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CuSe	COPPER SELENIDE	495
Cu2Se[B]	DICOPPER SELENIDE	495
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DH[g]	HYDROGEN-D1 (GAS)	502
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DyCl3[g]	DYSPROSIUM CHLORIDE (GAS)	510
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DyF3[g]	DYSPROSIUM FLUORIDE (GAS)	512
DyI3[g]	DYSPROSIUM IODIDE (GAS)	513
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Er[g]	ERBIUM (GAS)	516
ErBr3[g]	ERBIUM BROMIDE (GAS)	517
ErCl3	ERBIUM CHLORIDE	518
ErCl3[g]	ERBIUM CHLORIDE (GAS)	519
ErCl3*6H2O	ERBIUM CHLORIDE HEXAHYDRATE	519
ErF3	ERBIUM FLUORIDE	520
ErF3[g]	ERBIUM FLUORIDE (GAS)	521
ErI3[g]	ERBIUM IODIDE (GAS)	522
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Eu[g]	EUROPIUM (GAS)	525
EuBr2	EUROPIUM DIBROMIDE	526
EuBr2[g]	EUROPIUM DIBROMIDE (GAS)	526
EuBr3	EUROPIUM BROMIDE	527
EuCl3	EUROPIUM CHLORIDE	527
EuCl3[g]	EUROPIUM CHLORIDE (GAS)	528
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EuF3[g]	EUROPIUM FLUORIDE (GAS)	530
Eu2O3	EUROPIUM OXIDE (CUBIC)	530
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EuS	EUROPIUM MONOSULFIDE	532
EuS[g]	EUROPIUM MONOSULFIDE (GAS)	533
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F2[g]	FLUORINE (GAS)	535
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Fe[g]	IRON (GAS)	537
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Fe3(AsO4)2	TRIIRON DIARSENATE	538
FeB	IRON MONOBORIDE	539
Fe2B	DIIRON BORIDE	540
FeBr2	IRON DIBROMIDE	541
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FeBr3	IRON TRIBROMIDE	542
Fe2Br4[g]	DIIRON TETRABROMIDE (GAS)	543
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FeCO3	IRON CARBONATE	544
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FeCl2	IRON DICHLORIDE	547
FeCl2[g]	IRON DICHLORIDE (GAS)	548
FeCl3	IRON TRICHLORIDE	548
FeCl3[g]	IRON TRICHLORIDE (GAS)	549
Fe2Cl4[g]	DIIRON TETRACHLORIDE (GAS)	550
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FeF2	IRON DIFLUORIDE	552
FeF2[g]	IRON DIFLUORIDE (GAS)	553
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FeF3[g]	IRON TRIFLUORIDE (GAS)	554
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FeI2[g]	IRON DIIODIDE (GAS)	556
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FeOCl	IRON CHLORIDE OXIDE	565
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Fe2ZnO4	DIIRON ZINC TETRAOXIDE	574
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FeS[g]	IRON MONOSULFIDE (GAS)	577
FeS2	IRON DISULFIDE	578
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Fe2(SO4)3	DIIRON TRISULFATE	579
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FeSi	IRON SILICON	580
FeSi2	LEBOITE (BETA)	580
FeSi2.33	LEBOITE (ALPHA)	581
Fe2Ta	2-IRON TANTALUM	581
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FeTe2	IRON DITELLURIDE	582
FeTi	IRON TITANIUM	583
Fe2U	2-IRON URANIUM	584
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GaBr3	GALLIUM BROMIDE	589
GaCl[g]	GALLIUM MONOCHLORIDE (GAS)	589
GaCl2[g]	GALLIUM DICHLORIDE (GAS)	590
GaCl3	GALLIUM CHLORIDE	590
GaCl3[g]	GALLIUM CHLORIDE (GAS)	591
Ga2Cl6[g]	DIGALLIUM HEXACHLORIDE (GAS)	592
GaF[g]	GALLIUM MONOFLUORIDE (GAS)	593
GaF2[g]	GALLIUM DIFLUORIDE (GAS)	594
GaF3	GALLIUM FLUORIDE	595
GaF3[g]	GALLIUM FLUORIDE (GAS)	596
GaI3	GALLIUM IODIDE	596
GaN	GALLIUM NITRIDE	597
GaO[g]	GALLIUM MONOXIDE (GAS)	598
Ga2O[g]	DIGALLIUM OXIDE (GAS)	599
Ga2O3	GALLIUM OXIDE	600
GaP	GALLIUM PHOSPHIDE	601
GaS	GALLIUM MONOSULFIDE	601
Ga2S[g]	DIGALLIUM SULFIDE (GAS)	602
Ga2S3	DIGALLIUM TRISULFIDE	602
GaSb	GALLIUM ANTIMONY	603
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GdF3[g]	GADOLINIUM FLUORIDE (GAS)	613
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GdI3[g]	GADOLINIUM IODIDE (GAS)	615
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GeCl[g]	GERMANIUM MONOCHLORIDE (GAS)	620
GeCl2[g]	GERMANIUM DICHLORIDE (GAS)	621
GeCl3[g]	GERMANIUM TRICHLORIDE (GAS)	622
GeCl4[g]	GERMANIUM TETRACHLORIDE (GAS)	623
GeF[g]	GERMANIUM MONOFLUORIDE (GAS)	624
GeF2[g]	GERMANIUM DIFLUORIDE (GAS)	625
GeF3[g]	GERMANIUM TRIFLUORIDE (GAS)	626
GeF4[g]	GERMANIUM TETRAFLUORIDE (GAS)	627
GeH4[g]	GERMANIUM TETRAHYDRIDE (GAS)	628
GeI4[g]	GERMANIUM TETRAIODIDE (GAS)	628
GeMg2	GERMANIUM 2-MAGNESIUM	629
GeNi2	GERMANIUM 2-NICKEL	629
GeO[g]	GERMANIUM MONOXIDE (GAS)	630
GeO2	GERMANIUM DIOXIDE	631
GeP	GERMANIUM PHOSPHIDE	632
GeS	GERMANIUM MONOSULFIDE	632
GeS[g]	GERMANIUM MONOSULFIDE (GAS)	633
GeS2	GERMANIUM DISULFIDE	634
GeSe	GERMANIUM MONOSELENIDE	634
GeSe[g]	GERMANIUM MONOSELENIDE (GAS)	635
GeSe2	GERMANIUM DISELENIDE	635
GeTe	GERMANIUM MONOTELLURIDE	636
GeU	GERMANIUM URANIUM	636
Ge2U	2-GERMANIUM URANIUM	637
Ge3U	3-GERMANIUM URANIUM	637
Ge3U5	3-GERMANIUM 5-URANIUM	638
Ge5U3	5-GERMANIUM 3-URANIUM	638
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HBO2[g]	METABORIC ACID (GAS)	641
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H3BO3[g]	BORIC ACID (GAS)	642
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HI[g]	HYDROGEN IODIDE (GAS)	647
HNCO[g]	ISOCYANIC ACID (GAS)	648
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H2O[g]	WATER (GAS)	650
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H2O2[g]	HYDROGEN PEROXIDE (GAS)	651
HDO[g]	WATER-D1 (GAS)	652
H3PO4	PHOSPHORIC ACID	653
HS[g]	HYDROGEN MONOSULFIDE (GAS)	654
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H2Se[g]	HYDROGEN SELENIDE (GAS)	657
H2Te[g]	HYDROGEN TELLURIDE (GAS)	658
H2WO4	TUNGSTIC ACID	658
H2WO4[g]	TUNGSTIC ACID (GAS)	659
He[g]	HELIUM (GAS)	660
Hf	HAFNIUM	661
Hf[g]	HAFNIUM (GAS)	663
HfB2	HAFNIUM DIBORIDE	664
HfBr4	HAFNIUM TETRABROMIDE	664
HfBr4[g]	HAFNIUM TETRABROMIDE (GAS)	665
HfC	HAFNIUM CARBIDE	666
HfCl2[g]	HAFNIUM DICHLORIDE (GAS)	667
HfCl3[g]	HAFNIUM TRICHLORIDE (GAS)	668
HfCl4	HAFNIUM TETRACHLORIDE	668
HfCl4[g]	HAFNIUM TETRACHLORIDE (GAS)	669
HfF4	HAFNIUM TETRAFLUORIDE	669
HfF4[g]	HAFNIUM TETRAFLUORIDE (GAS)	670
HfI4	HAFNIUM TETRAIODIDE	670
HfI4[g]	HAFNIUM TETRAIODIDE (GAS)	671
HfN	HAFNIUM NITRIDE	671
HfO2	HAFNIUM DIOXIDE	672
HfSrO3	HAFNIUM STRONTIUM TRIOXIDE	673
Hg	MERCURY	673
Hg[g]	MERCURY (GAS)	674
Hg3(AsO4)2	TRIMERCURY DIARSENATE	674
HgBr[g]	MERCURY MONOBROMIDE (GAS)	675
HgBr2	MERCURY DIBROMIDE	675
HgBr2[g]	MERCURY DIBROMIDE (GAS)	676
Hg2Br2	DIMERCURY DIBROMIDE	676
HgCl[g]	MERCURY MONOCHLORIDE (GAS)	677
HgCl2	MERCURY DICHLORIDE	677
HgCl2[g]	MERCURY DICHLORIDE (GAS)	678
Hg2Cl2	DIMERCURY DICHLORIDE	678
HgF[g]	MERCURY MONOFLUORIDE (GAS)	679
HgF2	MERCURY DIFLUORIDE	679
HgF2[g]	MERCURY DIFLUORIDE (GAS)	680
Hg2F2	DIMERCURY DIFLUORIDE	680
HgH[g]	MERCURY MONOHYDRIDE (GAS)	681
HgI[g]	MERCURY MONOIODIDE (GAS)	682
HgI2	MERCURY DIIODIDE	682
HgI2[g]	MERCURY DIIODIDE (GAS)	683
Hg2I2	DIMERCURY DIIODIDE	683
HgO	MERCURY OXIDE (RED)	684
HgO[g]	MERCURY OXIDE (GAS)	684
HgS	MERCURY SULFIDE (RED.)	685
HgS[g]	MERCURY SULFIDE (GAS)	685
HgSO4	MERCURY SULFATE	686
Hg2SO4	DIMERCURY SULFATE	686
HgSe	MERCURY SELENIDE	687
HgSe[g]	MERCURY SELENIDE (GAS)	687
HgSeO3	MERCURY SELENITE	688
HgTe	MERCURY TELLURIDE	688
HgTe[g]	MERCURY TELLURIDE (GAS)	689
Ho	HOLMIUM	690
Ho[g]	HOLMIUM (GAS)	691
HoBr3	HOLMIUM BROMIDE	692
HoBr3[g]	HOLMIUM BROMIDE (GAS)	693
HoCl3	HOLMIUM CHLORIDE	694
HoCl3[g]	HOLMIUM CHLORIDE (GAS)	695
HoCl3*6H2O	HOLMIUM CHLORIDE HEXAHYDRATE	695
HoF3	HOLMIUM FLUORIDE	696
HoF3[g]	HOLMIUM FLUORIDE (GAS)	697
Ho2O3	HOLMIUM OXIDE	697
I[g]	IODINE (GAS)	698
I2	IODINE	699
I2[g]	IODINE (GAS)	699
In	INDIUM	700
In[g]	INDIUM (GAS)	701
InAs	INDIUM ARSENIDE	702
InAsO4	INDIUM ARSENATE	702
InBr	INDIUM MONOBROMIDE	703
InBr[g]	INDIUM MONOBROMIDE (GAS)	703
InBr3	INDIUM TRIBROMIDE	704
InCl	INDIUM MONOCHLORIDE	704
InCl[g]	INDIUM MONOCHLORIDE (GAS)	705
InCl2	INDIUM DICHLORIDE	705
InCl2[g]	INDIUM DICHLORIDE (GAS)	706
InCl3	INDIUM TRICHLORIDE	706
InCl3[g]	INDIUM TRICHLORIDE (GAS)	707
In2Cl6[g]	DIINDIUM HEXACHLORIDE (GAS)	708
InF[g]	INDIUM MONOFLUORIDE (GAS)	709
InF2[g]	INDIUM DIFLUORIDE (GAS)	710
InF3	INDIUM TRIFLUORIDE	711
InF3[g]	INDIUM TRIFLUORIDE (GAS)	712
InI	INDIUM MONOIODIDE	712
InI[g]	INDIUM MONOIODIDE (GAS)	713
InI2[g]	INDIUM DIIODIDE (GAS)	714
InI3	INDIUM TRIIODIDE	714
InI3[g]	INDIUM TRIIODIDE (GAS)	715
InN	INDIUM NITRIDE	715
In2O[g]	DIINDIUM OXIDE (GAS)	716
In2O3	DIINDIUM TRIOXIDE	717
InP	INDIUM PHOSPHIDE	718
InS	INDIUM MONOSULFIDE	719
InS[g]	INDIUM MONOSULFIDE (GAS)	720
In2S3	DIINDIUM TRISULFIDE	721
In5S6	PENTAINDIUM HEXASULFIDE	721
In2(SO4)3	DIINDIUM TRISULFATE	722
InSb	INDIUM ANTIMONY	722
InSe	INDIUM MONOSELENIDE	723
InSe[g]	INDIUM MONOSELENIDE (GAS)	724
In2Se3	DIINDIUM TRISELENIDE	724
InTe	INDIUM MONOTELLURIDE	725
In2Te	DIINDIUM TELLURIDE	725
In2Te3	DIINDIUM TRITELLURIDE	726
Ir	IRIDIUM	727
Ir[g]	IRIDIUM (GAS)	728
IrBr3	IRIDIUM TRIBROMIDE	729
IrCl3	IRIDIUM TRICHLORIDE	729
IrF6[g]	IRIDIUM HEXAFLUORIDE (GAS)	730
IrI	IRIDIUM MONOIODIDE	730
IrI2	IRIDIUM DIIODIDE	731
IrO2	IRIDIUM DIOXIDE	731
IrO2[g]	IRIDIUM DIOXIDE (GAS)	732

Formula	Name	Page
IrO3[g]	IRIDIUM TRIOXIDE (GAS)	733
IrS2	IRIDIUM DISULFIDE	733
Ir2S3	DIIRIDIUM TRISULFIDE	734
K	POTASSIUM	734
K[g]	POTASSIUM (GAS)	735
K2[g]	POTASSIUM (GAS)	736
KAlCl4	POTASSIUM TETRACHLOROALUMINATE	736
K3AlCl6	TRIPOTASSIUM HEXACHLOROALUMINATE	737
K3AlF6	TRIPOTASSIUM HEXAFLUOROALUMINATE	737
KAl(SO4)2	POTASSIUM ALUMINIUM SULFATE	738
KAl(SO4)2*3H2O	POTASSIUM ALUMIN. SULFATE 3-HYDRATE	738
KAl(SO4)2*12H2O	POTASSIUM ALUMIN. SULFATE 12-HYDR.	739
K3AsO4	POTASSIUM ARSENATE	739
KBO2	POTASSIUM METABORATE	740
KBO2[g]	POTASSIUM METABORATE (GAS)	741
KBr	POTASSIUM BROMIDE	742
KBr[g]	POTASSIUM BROMIDE (GAS)	743
K2Br2[g]	DIPOTASSIUM DIBROMIDE (GAS)	744
KCN	POTASSIUM CYANIDE	745
KCN[g]	POTASSIUM CYANIDE (GAS)	746
K2(CN)2[g]	DIPOTASSIUM DICYANIDE (GAS)	747
K2CO3	POTASSIUM CARBONATE	748
KCl	POTASSIUM CHLORIDE	749
KCl[g]	POTASSIUM CHLORIDE (GAS)	750
K2Cl2[g]	DIPOTASSIUM DICHLORIDE (GAS)	751
KClO4	POTASSIUM PERCHLORATE	751
K2CrO4	POTASSIUM CHROMATE	752
KF	POTASSIUM FLUORIDE	753
KF[g]	POTASSIUM FLUORIDE (GAS)	754
K2F2[g]	DIPOTASSIUM DIFLUORIDE (GAS)	755
KH	POTASSIUM HYDRIDE	755
KH[g]	POTASSIUM HYDRIDE (GAS)	756
KH2PO4	POTASSIUM DIHYDROGEN PHOSPHATE	757
K2HPO4	DIPOTASSIUM HYDROGEN PHOSPHATE	757
KI	POTASSIUM IODIDE	758
KI[g]	POTASSIUM IODIDE (GAS)	759
K2I2[g]	DIPOTASSIUM DIIODIDE (GAS)	760
KNO3	POTASSIUM NITRATE	760
KO[g]	POTASSIUM MONOXIDE (GAS)	761
KO2	POTASSIUM DIOXIDE	761
K2O	POTASSIUM OXIDE	762
K2O2	DIPOTASSIUM PEROXIDE	762
KAlSiO4	KALIOPHILITE	763
KAlSi2O6	LEUCITE	763
KAlSi3O8	MICROCLINE	764
KAlSi3O8[A]	ADULARIA	764
KAlSi3O8[S]	SANIDINE	765
KAl3Si3O10(OH)2	MUSCOVITE	766
K2B4O7	DIPOTASSIUM TETRABORATE	767
K2B6O10	DIPOTASSIUM HEXABORATE	767
K2B8O13	DIPOTASSIUM OCTABORATE	768
KOH	POTASSIUM HYDROXIDE	769
KOH[g]	POTASSIUM HYDROXIDE (GAS)	770
K2(OH)2[g]	DIPOTASSIUM DIHYDROXIDE (GAS)	771
K2SiO3	POTASSIUM METASILICATE	772
K2Si2O5	POTASSIUM DISILICATE	773
K2Si4O9	POTASSIUM TETRASILICATE	774
K3PO4	POTASSIUM PHOSPHATE	774
K2S	POTASSIUM SULFIDE	775
K2SO3	POTASSIUM SULFITE	776
K2SO4	POTASSIUM SULFATE	777
Kr[g]	KRYPTON (GAS)	778
La	LANTHANUM	779
La[g]	LANTHANUM (GAS)	780
LaAsO4	LANTHANUM ARSENATE	781
LaBr3	LANTHANUM BROMIDE	781
LaBr3[g]	LANTHANUM BROMIDE (GAS)	782
LaCl3	LANTHANUM CHLORIDE	783
LaCl3[g]	LANTHANUM CHLORIDE (GAS)	784
LaF3	LANTHANUM FLUORIDE	785
LaF3[g]	LANTHANUM FLUORIDE (GAS)	786
LaH2	LANTHANUM DIHYDRIDE	786
LaI3	LANTHANUM IODIDE	787
LaI3[g]	LANTHANUM IODIDE (GAS)	788
LaMg	LANTHANUM MAGNESIUM	788
LaN	LANTHANUM NITRIDE	789
La2O3	LANTHANUM OXIDE	790
LaOCl	LANTHANUM CHLORIDE OXIDE	790
LaS	LANTHANUM MONOSULFIDE	791
La2S3	LANTHANUM SULFIDE	792
LaSe	LANTHANUM MONOSELENIDE	793
LaSe[g]	LANTHANUM MONOSELENIDE (GAS)	794
La2Se3	LANTHANUM SELENIDE	795
La2Te3	LANTHANUM TELLURIDE	796
Li	LITHIUM	797
Li[g]	LITHIUM (GAS)	798
Li2[g]	LITHIUM (GAS)	799
LiAlF4[g]	LITHIUM TETRAFLUOROALUMINATE (GAS)	800
Li3AlF6	TRILITHIUM HEXAFLUOROALUMINATE	801
Li3AsO4	LITHIUM ARSENATE	802
LiBO2	LITHIUM METABORATE	802
LiBO2[g]	LITHIUM METABORATE (GAS)	803
LiBeF3	LITHIUM TRIFLUOROBERYLLATE	803
LiBeF3[g]	LITHIUM TRIFLUOROBERYLLATE (GAS)	804
Li2BeF4	DILITHIUM TETRAFLUOROBERYLLATE	805
LiBr	LITHIUM BROMIDE	806
LiBr[g]	LITHIUM BROMIDE (GAS)	807
Li2Br2[g]	DILITHIUM DIBROMIDE (GAS)	808
Li2CO3	LITHIUM CARBONATE	809
LiCl	LITHIUM CHLORIDE	810
LiCl[g]	LITHIUM CHLORIDE (GAS)	811
Li2Cl2[g]	DILITHIUM DICHLORIDE (GAS)	812
LiClO[g]	LITHIUM HYPOCHLORITE (GAS)	813
LiClO4	LITHIUM PERCHLORATE	814
LiF	LITHIUM FLUORIDE	815
LiF[g]	LITHIUM FLUORIDE (GAS)	816
Li2F2[g]	DILITHIUM DIFLUORIDE (GAS)	817
Li3F3[g]	TRILITHIUM TRIFLUORIDE (GAS)	818
LiFO[g]	LITHIUM HYPOFLUORITE (GAS)	819
LiH	LITHIUM HYDRIDE	820
LiH[g]	LITHIUM HYDRIDE (GAS)	821
LiI	LITHIUM IODIDE	822
LiI[g]	LITHIUM IODIDE (GAS)	823
Li2I2[g]	DILITHIUM DIIODIDE (GAS)	824
Li3N	TRILITHIUM NITRIDE	824
LiO[g]	LITHIUM MONOXIDE (GAS)	825

Formula	Name	Page
Li2O	LITHIUM OXIDE	826
Li2O[g]	LITHIUM OXIDE (GAS)	827
Li2O2	DILITHIUM PEROXIDE	827
Li2O2[g]	DILITHIUM PEROXIDE (GAS)	828
LiAlO2	LITHIUM ALUMINATE	829
LiAlSiO4	EUCRYPTITE	830
LiAlSi2O6	ALPHA-SPODUMENE	830
LiAlSi2O6[B]	BETA-SPODUMENE	831
Li2B4O7	DILITHIUM TETRABORATE	832
Li2B6O10	DILITHIUM HEXABORATE	833
LiFeO2	LITHIUM IRON DIOXIDE	833
LiOH	LITHIUM HYDROXIDE	834
LiOH[g]	LITHIUM HYDROXIDE (GAS)	835
Li2(OH)2[g]	DILITHIUM DIHYDROXIDE (GAS)	836
Li2SiO3	LITHIUM METASILICATE	837
Li2Si2O5	LITHIUM DISILICATE	838
Li4SiO4	LITHIUM ORTHOSILICATE	839
Li2TiO3	DILITHIUM TITANIUM TRIOXIDE	840
Li2ZrO3	DILITHIUM ZIRCONIUM TRIOXIDE	841
Li2S	LITHIUM SULFIDE	841
Li2SO4	LITHIUM SULFATE	842
Li2Se	LITHIUM SELENIDE	842
Li2Te	LITHIUM TELLURIDE	843
Lu	LUTETIUM	844
Lu[g]	LUTETIUM (GAS)	845
Lu2O3	LUTETIUM OXIDE	846
Mg	MAGNESIUM	847
Mg[g]	MAGNESIUM (GAS)	848
Mg3(AsO4)2	MAGNESIUM ARSENATE	848
MgB2	MAGNESIUM DIBORIDE	849
MgB4	MAGNESIUM TETRABORIDE	849
MgBr[g]	MAGNESIUM MONOBROMIDE (GAS)	850
MgBr2	MAGNESIUM BROMIDE	851
MgBr2[g]	MAGNESIUM BROMIDE (GAS)	852
Mg2Br4[g]	DIMAGNESIUM TETRABROMIDE (GAS)	853
MgC2	MAGNESIUM DICARBIDE	854
Mg2C3	DIMAGNESIUM TRICARBIDE	855
MgCO3	MAGNESIUM CARBONATE	855
MgCl[g]	MAGNESIUM MONOCHLORIDE	856
MgCl2	MAGNESIUM CHLORIDE	857
MgCl2[g]	MAGNESIUM CHLORIDE (GAS)	858
MgF[g]	MAGNESIUM MONOFLUORIDE (GAS)	859
MgF2	MAGNESIUM FLUORIDE	860
MgF2[g]	MAGNESIUM FLUORIDE (GAS)	861
Mg2F4[g]	DIMAGNESIUM TETRAFLUORIDE (GAS)	862
MgH2	MAGNESIUM HYDRIDE	862
MgI[g]	MAGNESIUM MONOIODIDE (GAS)	863
MgI2	MAGNESIUM IODIDE	864
MgI2[g]	MAGNESIUM IODIDE (GAS)	865
MgMoO4	MAGNESIUM MOLYBDATE	865
Mg3N2	TRIMAGNESIUM DINITRIDE	866
Mg(NO3)2	MAGNESIUM NITRATE	866
MgNi2	MAGNESIUM 2-NICKEL	867
MgO	MAGNESIUM OXIDE	868
MgAl2O4	MAGNESIUM DIALUMINIUM TETRAOXIDE	869
MgOH[g]	MAGNESIUM MONOHYDROXIDE (GAS)	870
Mg(OH)2	MAGNESIUM HYDROXIDE	871
Mg(OH)Cl	MAGNESIUM CHLORIDE HYDROXIDE	871
MgSiO3	MAGNESIUM METASILICATE	872
Mg2SiO4	MAGNESIUM ORTHOSILICATE	873
Mg3Si2O5(OH)4	CHRYSOTILE	874
Mg3Si4O10(OH)2	TALC	874
Mg7Si8O22(OH)2	ANTHOPHYLLITE	875
MgTiO3	MAGNESIUM TITANIUM TRIOXIDE	876
MgTi2O5	MAGNESIUM DITITANIUM PENTOXIDE	877
Mg2TiO4	DIMAGNESIUM TITANIUM TETRAOXIDE	878
Mg3(PO4)2	MAGNESIUM ORTHOPHOSPHATE	879
Mg2Pb	2-MAGNESIUM LEAD	879
MgS	MAGNESIUM SULFIDE	880
MgS[g]	MAGNESIUM SULFIDE (GAS)	881
MgSO4	MAGNESIUM SULFATE	882
MgSe	MAGNESIUM SELENIDE	882
MgSeO3	MAGNESIUM SELENITE	883
Mg2Si	2-MAGNESIUM SILICON	883
MgTe	MAGNESIUM TELLURIDE	884
Mg2Th	2-MAGNESIUM THORIUM	884
Mg(VO3)2	MAGNESIUM METAVANADATE	885
Mg2V2O7	MAGNESIUM PYROVANADATE	885
MgWO4	MAGNESIUM TUNGSTATE	886
Mn	MANGANESE	887
Mn[g]	MANGANESE (GAS)	888
MnAs	MANGANESE ARSENIDE	889
Mn3(AsO4)2	MANGANESE ARSENATE	889
MnB	MANGANESE MONOBORIDE	890
MnB2	MANGANESE DIBORIDE	890
MnBr2	MANGANESE DIBROMIDE	891
MnBr2[g]	MANGANESE DIBROMIDE (GAS)	892
Mn3C	TRIMANGANESE CARBIDE	892
Mn7C3	HEPTAMANGANESE TRICARBIDE	893
Mn15C4	15-MANGANESE 4-CARBID	893
MnCO3	MANGANESE CARBONATE	894
MnCl2	MANGANESE DICHLORIDE	894
MnCl2[g]	MANGANESE DICHLORIDE (GAS)	895
MnF2	MANGANESE DIFLUORIDE	896
MnF2[g]	MANGANESE DIFLUORIDE (GAS)	896
MnF3	MANGANESE TRIFLUORIDE	897
MnI2	MANGANESE DIIODIDE	897
MnMoO4	MANGANESE MOLYBDATE	898
Mn4N	TETRAMANGANESE MONONITRIDE	898
Mn5N2	PENTAMANGANESE DINITRIDE	899
MnO	MANGANESE OXIDE	900
MnO2	MANGANESE DIOXIDE	901
Mn2O3	DIMANGANESE TRIOXIDE	901
Mn3O4	TRIMANGANESE TETRAOXIDE	902
MnAl2O4	MANGANESE DIALUMINIUM TETRAOXIDE	903
MnSiO3	RHODONITE	904
Mn2SiO4	TEPHROITE	905
MnTiO3	MANGANESE TITANIUM TRIOXIDE	906
Mn2TiO4	DIMANGANESE TITANIUM TETRAOXIDE	906
MnP	MANGANESE MONOPHOSPHIDE	907
MnP3	MANGANESE TRIPHOSPHIDE	907
Mn2P	DIMANGANESE PHOSPHIDE	908
MnS	MANGANESE MONOSULFIDE (GREEN)	909
MnS2	MANGANESE DISULFIDE	909
MnSO4	MANGANESE SULFATE	910
MnSb	MANGANESE ANTIMONY	910

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Mn2Sb	2-MANGANESE ANTIMONY	911
MnSe	MANGANESE SELENIDE	911
MnSi	MANGANESE SILICON	912
MnSi1.7	MANGANESE 1.7-SILICON	913
Mn3Si	3-MANGANESE SILICON	913
Mn5Si3	5-MANGANESE 3-SILICON	914
MnSn2	MANGANESE 2-TIN	914
MnTe	MANGANESE TELLURIDE	915
MnTe2	MANGANESE DITELLURIDE	915
MnWO4	MANGANESE TUNGSTATE	916
Mo	MOLYBDENUM	917
Mo[g]	MOLYBDENUM (GAS)	919
MoAsO4	MOLYBDENUM ARSENATE	920
MoC	MOLYBDENUM MONOCARBIDE (GAMMA)	920
Mo2C	DIMOLYBDENUM CARBIDE	921
Mo(CO)6	MOLYBDENUM HEXACARBONYL	921
Mo(CO)6[g]	MOLYBDENUM HEXACARBONYL (GAS)	922
Mo2N	DIMOLYBDENUM NITRIDE	922
MoO[g]	MOLYBDENUM MONOXIDE (GAS)	923
MoO2	MOLYBDENUM DIOXIDE	924
MoO2[g]	MOLYBDENUM DIOXIDE (GAS)	925
MoO3	MOLYBDENUM TRIOXIDE	926
MoO3[g]	MOLYBDENUM TRIOXIDE (GAS)	927
MoO2Cl2	MOLYBDENUM DICHLORIDE DIOXIDE	928
MoO2Cl2[g]	MOLYBDENUM DICHLORIDE DIOX. (GAS)	928
MoS2	MOLYBDENUM DISULFIDE	929
MoS3	MOLYBDENUM TRISULFIDE	929
Mo2S3	MOLYBDENUM SESQUISULFIDE	930
MoSi2	MOLYBDENUM 2-SILICON	931
Mo3Si	3-MOLYBDENUM SILICON	932
Mo5Si3	5-MOLYBDENUM 3-SILICON	933
N[g]	NITROGEN (GAS)	934
N2[g]	NITROGEN (GAS)	935
NCO[g]	NCO RADICAL (GAS)	936
ND[g]	IMIDOGEN-D1 (GAS)	937
ND2[g]	AMIDOGEN-D2 (GAS)	938
ND3[g]	AMMONIA-D3 (GAS)	939
NH[g]	IMIDOGEN (GAS)	940
NH2[g]	AMIDOGEN (GAS)	941
NH3[g]	AMMONIA (GAS)	942
N2H4[g]	HYDRAZINE (GAS)	943
NH4Cl	AMMONIUM CHLORIDE	943
NH4ClO4	AMMONIUM PERCHLORATE	944
NH4I	AMMONIUM IODIDE	944
(NH4)2SO4	AMMONIUM SULFATE	945
NO[g]	NITRIC OXIDE (GAS)	946
NO2[g]	NITROGEN DIOXIDE (GAS)	947
NO3[g]	NITROGEN TRIOXIDE (GAS)	948
N2O[g]	DINITROGEN OXIDE (GAS)	949
N2O3[g]	DINITROGEN TRIOXIDE (GAS)	950
N2O4	DINITROGEN TETRAOXIDE	950
N2O4[g]	DINITROGEN TETRAOXIDE (GAS)	951
N2O5[g]	DINITROGEN PENTAOXIDE (GAS)	952
NOBr[g]	NITROSYL BROMIDE (GAS)	953
NOCl[g]	NITROSYL CHLORIDE (GAS)	954
NO2Cl[g]	NITRYL CHLORIDE (GAS)	955
NOF[g]	NITROSYL FLUORIDE (GAS)	956
Na	SODIUM	956
Na[g]	SODIUM (GAS)	957
Na2[g]	SODIUM (GAS)	958
NaAlCl4	SODIUM TETRACHLOROALUMINATE	958
Na3AlCl6	TRISODIUM HEXACHLOROALUMINATE	959
Na3AlF6	CRYOLITE	960
Na3As	TRISODIUM ARSENIDE	961
Na3AsO4	SODIUM ARSENATE	961
NaBO2	SODIUM METABORATE	962
NaBO2[g]	SODIUM METABORATE (GAS)	963
NaB3O5	SODIUM TRIBORATE	964
Na2B4O7	DISODIUM TETRABORATE	964
NaBr	SODIUM BROMIDE	965
NaBr[g]	SODIUM BROMIDE (GAS)	966
Na2Br2[g]	DISODIUM DIBROMIDE (GAS)	967
NaCN	SODIUM CYANIDE	968
NaCN[g]	SODIUM CYANIDE (GAS)	969
Na2(CN)2[g]	DISODIUM DICYANIDE (GAS)	970
Na2CO3	SODIUM CARBONATE	971
NaCl	SODIUM CHLORIDE	972
NaCl[g]	SODIUM CHLORIDE (GAS)	973
Na2Cl2[g]	DISODIUM DICHLORIDE (GAS)	974
NaClO4	SODIUM PERCHLORATE	974
Na2CrO4	SODIUM CHROMATE	975
NaF	SODIUM FLUORIDE	976
NaF[g]	SODIUM FLUORIDE (GAS)	977
Na2F2[g]	DISODIUM DIFLUORIDE (GAS)	978
NaH	SODIUM HYDRIDE	978
NaH[g]	SODIUM HYDRIDE (GAS)	979
NaHCO3	SODIUM HYDROGEN CARBONATE	979
NaI	SODIUM IODIDE	980
Na2MoO4	SODIUM MOLYBDATE	981
NaNO2	SODIUM NITRITE	982
NaNO3	SODIUM NITRATE	982
NaO[g]	SODIUM MONOXIDE (GAS)	983
NaO2	SODIUM SUPEROXIDE	983
Na2O	SODIUM OXIDE	984
Na2O2	DISODIUM PEROXIDE	985
NaAlO2	SODIUM ALUMINATE	986
NaAlSiO4	NEPHELINE	987
NaAlSi2O6	JADEITE	988
NaAlSi2O6[D]	DEHYDRATED ANALCITE	988
NaAlSi3O8	ALBITE	989
NaAlSi3O8[A]	ANALBITE	989
NaAlSi2O6*H2O	ANALCITE	990
NaOH	SODIUM HYDROXIDE	990
NaOH[g]	SODIUM HYDROXIDE (GAS)	991
Na2(OH)2[g]	DISODIUM DIHYDROXIDE (GAS)	992
Na2SiO3	SODIUM METASILICATE	993
Na2Si2O5	SODIUM DISILICATE	994
Na4SiO4	SODIUM ORTHOSILICATE	995
Na6Si2O7	HEXASODIUM DISILICON HEPTAOXIDE	995
Na2TiO3	DISODIUM TITANIUM TRIOXIDE	996
Na2Ti2O5	DISODIUM DITITANIUM PENTAOXIDE	997
Na2Ti3O7	DISODIUM TRITITANIUM HEPTAOXIDE	998
Na3PO4	SODIUM PHOSPHATE	998
Na2S	SODIUM SULFIDE	999
Na2S2	DISODIUM DISULFIDE	1000
Na2S3	DISODIUM TRISULFIDE	1000

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Na2S4	DISODIUM TETRASULFIDE	1001
Na2SO3	SODIUM SULFITE	1002
Na2SO4	SODIUM SULFATE	1003
Na2SO4[III]	SODIUM SULFATE (III)	1004
NaTe	SODIUM TELLURIDE	1004
NaTe3	SODIUM TRITELLURIDE	1005
Na2Te	SODIUM TELLURIDE	1006
NaVO3	SODIUM METAVANADATE	1007
Na3VO4	SODIUM ORTHOVANADATE	1008
Na4V2O7	SODIUM PYROVANADATE	1008
Na2WO4	SODIUM TUNGSTATE	1009
Nb	NIOBIUM	1010
Nb[g]	NIOBIUM (GAS)	1012
NbB2	NIOBIUM DIBORIDE	1013
NbBr5	NIOBIUM PENTABROMIDE	1014
NbBr5[g]	NIOBIUM PENTABROMIDE (GAS)	1014
NbC0.702	NIOBIUM 0.702-CARBIDE	1015
NbC0.825	NIOBIUM 0.825-CARBIDE	1016
NbC	NIOBIUM CARBIDE	1017
Nb2C	DINIOBIUM CARBIDE	1018
NbCl2	NIOBIUM DICHLORIDE	1018
NbCl2.33	NIOBIUM 2.33-CHLORIDE	1019
NbCl2.67	NIOBIUM 2.67-CHLORIDE	1019
NbCl3	NIOBIUM TRICHLORIDE	1020
NbCl3.13	NIOBIUM 3.13-CHLORIDE	1020
NbCl4	NIOBIUM TETRACHLORIDE	1021
NbCl4[g]	NIOBIUM TETRACHLORIDE (GAS)	1021
NbCl5	NIOBIUM PENTACHLORIDE	1022
NbCl5[g]	NIOBIUM PENTACHLORIDE (GAS)	1022
NbF5	NIOBIUM PENTAFLUORIDE	1023
NbF5[g]	NIOBIUM PENTAFLUORIDE (GAS)	1023
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NbI5	NIOBIUM PENTAIODIDE	1024
NbN	NIOBIUM NITRIDE	1025
Nb2N	DINIOBIUM NITRIDE	1026
NbO	NIOBIUM MONOXIDE	1027
NbO2	NIOBIUM DIOXIDE	1028
Nb2O5	DINIOBIUM PENTAOXIDE	1029
NbOCl2	NIOBIUM DICHLORIDE OXIDE	1030
NbOCl3	NIOBIUM TRICHLORIDE OXIDE	1030
NbOCl3[g]	NIOBIUM TRICHLORIDE OXIDE (GAS)	1031
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Nd[g]	NEODYMIUM (GAS)	1035
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NdBr3[g]	NEODYMIUM BROMIDE (GAS)	1037
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NdCl3[g]	NEODYMIUM CHLORIDE (GAS)	1039
NdF3	NEODYMIUM FLUORIDE	1040
NdF3[g]	NEODYMIUM FLUORIDE (GAS)	1041
NdH2	NEODYMIUM DIHYDRIDE	1041
NdI3	NEODYMIUM IODIDE	1042
NdI3[g]	NEODYMIUM IODIDE (GAS)	1043
Nd2O3	NEODYMIUM OXIDE	1044
NdOCl	NEODYMIUM CHLORIDE OXIDE	1044
Nd2Zr2O7	NEODYMIUM ZIRCONIUM HEPTAOXIDE	1045
NdS	NEODYMIUM MONOSULFIDE	1045
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NdSe	NEODYMIUM MONOSELENIDE	1047
Nd2Se3	NEODYMIUM SELENIDE	1048
NdTe	NEODYMIUM MONOTELLURIDE	1049
Nd2Te3	NEODYMIUM TELLURIDE	1050
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Ni[g]	NICKEL (GAS)	1053
NiAs	NICKEL ARSENIDE	1054
Ni5As2	5-NICKEL 2-ARSENIDE	1054
Ni11As8	11-NICKEL 8-ARSENIDE	1055
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NiB	NICKEL MONOBORIDE	1056
Ni4B3	TETRANICKEL TRIBORIDE	1056
NiBr[g]	NICKEL MONOBROMIDE (GAS)	1057
NiBr2	NICKEL BROMIDE	1057
NiBr2[g]	NICKEL BROMIDE (GAS)	1058
Ni3C	TRINICKEL CARBIDE	1058
NiCO3	NICKEL CARBONATE	1059
Ni(CO)4[g]	NICKEL TETRACARBONYL (GAS)	1059
NiCl[g]	NICKEL MONOCHLORIDE (GAS)	1060
NiCl2	NICKEL CHLORIDE	1061
NiCl2[g]	NICKEL CHLORIDE (GAS)	1062
NiF[g]	NICKEL MONOFLUORIDE (GAS)	1063
NiF2	NICKEL FLUORIDE	1064
NiF2[g]	NICKELFLUORIDE (GAS)	1065
NiI[g]	NICKEL MONOIODIDE (GAS)	1066
NiI2	NICKEL IODIDE	1066
NiO	NICKEL OXIDE	1067
NiO[g]	NICKEL OXIDE (GAS)	1068
NiAl2O4	NICKEL DIALUMINIUM TETRAOXIDE	1069
Ni2SiO4	DINICKEL ORTHOSILICATE	1070
NiTiO3	NICKEL TITANIUM TRIOXIDE	1071
Ni2P	DINICKEL PHOSPHIDE	1071
Ni3P	TRINICKEL PHOSPHIDE	1072
Ni5P2	PENTANICKEL DIPHOSPHIDE	1072
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NiS	NICKEL SULFIDE	1074
NiS2	NICKEL DISULFIDE	1075
Ni3S2	TRINICKEL DISULFIDE	1076
Ni3S4	TRINICKEL TETRASULFIDE	1076
NiSO4	NICKEL SULFATE	1077
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NiSe1.05	NICKEL 1.05-SELENIDE	1078
NiSe1.143	NICKEL 1.143-SELENIDE	1078
NiSe1.25	NICKEL 1.25-SELENIDE	1079
NiSe2	NICKEL DISELENIDE	1079
NiSeO3	NICKEL SELENITE	1080
NiSi	NICKEL SILICON	1080
Ni7Si13	7-NICKEL 13-SILICON	1081
Ni3Sn	3-NICKEL TIN	1081
Ni3Sn2	3-NICKEL 2-TIN	1082
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NiTi	NICKEL TITANIUM	1083
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NpCl3	NEPTUNIUM TRICHLORIDE	1088
NpCl4	NEPTUNIUM TETRACHLORIDE	1088
NpF3	NEPTUNIUM TRIFLUORIDE	1089
NpF6	NEPTUNIUM HEXAFLUORIDE	1089
NpF6[g]	NEPTUNIUM HEXAFLUORIDE (GAS)	1090
NpO2	NEPTUNIUM DIOXIDE	1090
NpOCl2	NEPTUNIUM DICHLORIDE OXIDE	1091
NpO3*H2O	NEPTUNIUM TRIOXIDE HYDRATE	1091
O[g]	OXYGEN (GAS)	1092
O2[g]	OXYGEN (GAS)	1093
O3[g]	OZONE (GAS)	1094
OD[g]	HYDROXYL-D1 (GAS)	1095
OF2[g]	OXYGEN DIFLUORIDE (GAS)	1096
OH[g]	HYDROXYL (GAS)	1097
Os	OSMIUM	1098
Os[g]	OSMIUM (GAS)	1100
OsO2	OSMIUM DIOXIDE	1101
OsO4	OSMIUM TETRAOXIDE (YELLOW)	1102
OsO4[g]	OSMIUM TETRAOXIDE (GAS)	1102
OsP2	OSMIUM DIPHOSPHIDE	1103
OsS2	OSMIUM DISULFIDE	1103
OsSe2	OSMIUM DISELENIDE	1104
P	PHOSPHORUS (WHITE)	1104
P[g]	PHOSPHORUS (GAS)	1105
P[R]	PHOSPHORUS (RED)	1105
P2[g]	PHOSPHORUS (GAS)	1106
P4[g]	PHOSPHORUS (GAS)	1107
PBr3[g]	PHOSPHORUS TRIBROMIDE (GAS)	1108
PCl3[g]	PHOSPHORUS TRICHLORIDE (GAS)	1109
PCl5[g]	PHOSPHORUS PENTACHLORIDE (GAS)	1110
PF3[g]	PHOSPHORUS TRIFLUORIDE (GAS)	1111
PF5[g]	PHOSPHORUS PENTAFLUORIDE (GAS)	1112
PH3[g]	PHOSPHINE (GAS)	1113
PI3[g]	PHOSPHORUS TRIIODIDE (GAS)	1113
PN[g]	PHOSPHORUS MONONITRIDE (GAS)	1114
PO[g]	PHOSPHORUS MONOXIDE (GAS)	1115
PO2[g]	PHOSPHORUS DIOXIDE (GAS)	1116
P2O5	DIPHOSPHORUS PENTAOXIDE (LIQID)	1117
P4O6[g]	TETRAPHOSPHORUS HEXAOXIDE (GAS)	1118
P4O10	TETRAPHOSPHORUS DECAOXIDE	1118
P4O10[g]	TETRAPHOSPHORUSDECAOXIDE (GAS)	1119
POBr3[g]	PHOSPHORUS TRIBROMIDE OXIDE (GAS)	1120
POCl3	PHOSPHORUS TRICHLORIDE OXIDE	1120
POCl3[g]	PHOSPHORUS TRICHLORIDE OXIDE (GAS)	1121
PS[g]	PHOSPHORUS MONOSULFIDE (GAS)	1122
P4S3	TETRAPHOSPHORUS TRISULFIDE	1122
P4S5	TETRAPHOSPHORUS PENTASULFIDE	1123
P4S6	TETRAPHOSPHORUS HEXASULFIDE	1123
P4S7	TETRAPHOSPHORUS HEPTASULFIDE	1124
P4S10	TETRAPHOSPHORUS DECASULFIDE	1124
Pa	PROTACTINIUM	1125
Pa[g]	PROTACTINIUM (GAS)	1126
Pb	LEAD	1127
Pb[g]	LEAD (GAS)	1128
Pb2[g]	LEAD (GAS)	1129
Pb3(AsO4)2	LEAD ARSENATE	1129
PbBr[g]	LEAD MONOBROMIDE (GAS)	1130
PbBr2	LEAD DIBROMIDE	1131
PbBr2[g]	LEAD DIBROMIDE (GAS)	1132
PbBr4[g]	LEAD TETRABROMIDE (GAS)	1133
PbCO3	LEAD CARBONATE	1133
PbCl[g]	LEAD MONOCHLORIDE (GAS)	1134
PbCl2	LEAD DICHLORIDE	1135
PbCl2[g]	LEAD DICHLORIDE (GAS)	1136
PbCl4[g]	LEAD TETRACHLORIDE (GAS)	1137
PbF[g]	LEAD MONOFLUORIDE (GAS)	1138
PbF2	LEAD DIFLUORIDE	1139
PbF2[g]	LEAD DIFLUORIDE (GAS)	1140
PbF4[g]	LEAD TETRAFLUORIDE (GAS)	1141
PbH[g]	LEAD MONOHYDRIDE (GAS)	1142
PbI[g]	LEAD MONOIODIDE (GAS)	1143
PbI2	LEAD DIIODIDE	1144
PbI2[g]	LEAD DIIODIDE (GAS)	1145
PbI4[g]	LEAD TETRAIODIDE (GAS)	1146
Pb2I4[g]	DILEAD TETRAIODIDE (GAS)	1146
PbMoO4	LEAD MOLYBDATE	1147
PbO	LEAD OXIDE (YELLOW, MASSICOT)	1148
PbO[g]	LEAD OXIDE (GAS)	1149
PbO[R]	LEAD OXIDE (RED)	1149
PbO2	LEAD DIOXIDE	1150
Pb3O4	TRILEAD TETRAOXIDE	1150
PbB2O4	LEAD DIBORATE	1151
PbB4O7	LEAD TETRABORATE	1151
PbO*PbCO3	DILEAD OXIDE CARBONATE	1152
PbO*PbSO4	DILEAD OXIDE SULFATE	1152
2PbO*PbSO4	TRILEAD DIOXIDE SULFATE	1153
3PbO*PbSO4	TETRALEAD TRIOXIDE SULFATE	1153
4PbO*PbSO4	PENTALEAD TETRAOXIDE SULFATE	1154
PbSiO3	LEAD METASILICATE	1154
Pb2SiO4	DILEAD ORTHOSILICATE	1155
Pb4SiO6	TETRALEAD SILICATE	1156
PbTiO3	LEAD TITANIUM TRIOXIDE	1157
PbS	LEAD SULFIDE	1158
PbS[g]	LEAD SULFIDE (GAS)	1159
PbSO4	LEAD SULFATE	1160
PbSe	LEAD SELENIDE	1161
PbSe[g]	LEAD SELENIDE (GAS)	1162
PbSeO3	LEAD SELENITE	1162
PbSeO4	LEAD SELENATE	1163
PbTe	LEAD TELLURIDE	1163
PbTe[g]	LEAD TELLURIDE (GAS)	1164
PbWO4	LEAD TUNGSTATE	1164
Pd	PALLADIUM	1165
Pd[g]	PALLADIUM (GAS)	1166
PdCl2	PALLADIUM CHLORIDE	1167
PdF2	PALLADIUM FLUORIDE	1167
PdI2	PALLADIUM IODIDE	1168
PdO	PALLADIUM OXIDE	1168
PdS	PALLADIUM SULFIDE	1169
PdS2	PALLADIUM DISULFIDE	1169
Pd4S	TETRAPALLADIUM SULFIDE	1170
PdTe	PALLADIUM TELLURIDE	1170
Pr	PRASEODYMIUM	1171

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Pr[g]	PRASEODYMIUM (GAS)	1172
PrBr3	PRASEODYMIUM BROMIDE	1173
PrBr3[g]	PRASEODYMIUM BROMIDE (GAS)	1174
PrCl3	PRASEODYMIUM CHLORIDE	1175
PrCl3[g]	PRASEODYMIUM CHLORIDE (GAS)	1176
PrF3	PRASEODYMIUM FLUORIDE	1177
PrF3[g]	PRASEODYMIUM FLUORIDE (GAS)	1178
PrH2	PRASEODYMIUM DIHYDRIDE	1178
PrI3	PRASEODYMIUM IODIDE	1179
PrI3[g]	PRASEODYMIUM IODIDE (GAS)	1180
PrO1.833	PRASEODYMIUM 1.833-OXIDE	1180
PrO2	PRASEODYMIUM DIOXIDE	1181
Pr2O3	PRASEODYMIUM OXIDE	1181
Pr7O12	7-PRASEODYMIUM 12-OXIDE	1182
PrS	PRASEODYMIUM MONOSULFIDE	1182
Pr3S4	TRIPRASEODYMIUM TETRASULFIDE	1183
Pt	PLATINUM	1184
Pt[g]	PLATINUM (GAS)	1185
PtBr2	PLATINUM DIBROMIDE	1186
PtBr3	PLATINUM TRIBROMIDE	1186
PtBr4	PLATINUM TETRABROMIDE	1187
PtCl2	PLATINUM DICHLORIDE	1187
PtCl3	PLATINUM TRICHLORIDE	1188
PtCl4	PLATINUM TETRACHLORIDE	1188
PtI4	PLATINUM TETRAIODIDE	1189
PtO2[g]	PLATINUM DIOXIDE (GAS)	1189
PtS	PLATINUM MONOSULFIDE	1190
PtS2	PLATINUM DISULFIDE	1190
Pt5Se4	PENTAPLATINUM TETRASELENIDE	1191
Pu	PLUTONIUM	1192
Pu[g]	PLUTONIUM (GAS)	1194
PuBr3	PLUTONIUM TRIBROMIDE	1195
PuC0.88	PLUTONIUM 0.88-CARBIDE	1196
PuC2	PLUTONIUM DICARBIDE	1197
Pu2C3	DIPLUTONIUM TRICARBIDE	1198
PuCl3	PLUTONIUM TRICHLORIDE	1199
PuF3	PLUTONIUM TRIFLUORIDE	1200
PuF4	PLUTONIUM TETRAFLUORIDE	1201
PuF6	PLUTONIUM HEXAFLUORIDE	1201
PuF6[g]	PLUTONIUM HEXAFLUORIDE (GAS)	1202
PuH2	PLUTONIUM DIHYDRIDE	1202
PuH3	PLUTONIUM TRIHYDRIDE	1203
PuI3	PLUTONIUM TRIIODIDE	1203
PuN	PLUTONIUM NITRIDE	1204
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PuOF	PLUTONIUM FLUORIDE OXIDE	1209
PuOI	PLUTONIUM IODIDE OXIDE	1210
PuS	PLUTONIUM MONOSULFIDE	1211
Pu2S3	DIPLUTONIUM TRISULFIDE	1212
Pu(SO4)2	PLUTONIUM DISULFATE	1212
Rb	RUBIDIUM	1213
Rb[g]	RUBIDIUM (GAS)	1214
Rb2[g]	RUBIDIUM (GAS)	1215
Rb3AsO4	RUBIDIUM ARSENATE	1216
RbBr	RUBIDIUM BROMIDE	1216
RbBr[g]	RUBIDIUM BROMIDE (GAS)	1217
Rb2CO3	RUBIDIUM CARBONATE	1218
RbCl	RUBIDIUM CHLORIDE	1219
RbCl[g]	RUBIDIUM CHLORIDE (GAS)	1220
Rb2Cl2[g]	DIRUBIDIUM DICHLORIDE (GAS)	1221
RbF	RUBIDIUM FLUORIDE	1222
RbF[g]	RUBIDIUM FLUORIDE (GAS)	1223
Rb2F2[g]	DIRUBIDIUM DIFLUORIDE (GAS)	1224
RbI	RUBIDIUM IODIDE	1225
RbI[g]	RUBIDIUM IODIDE (GAS)	1226
RbO2	RUBIDIUM PEROXIDE	1227
Rb2O	RUBIDIUM OXIDE	1228
Rb2SiO3	RUBIDIUM METASILICATE	1229
Rb2Si2O5	RUBIDIUM DISILICATE	1230
Rb2Si4O9	RUBIDIUM TETRASILICATE	1231
Rb2SO4	RUBIDIUM SULFATE	1232
Re	RHENIUM	1233
Re[g]	RHENIUM (GAS)	1235
Re3As7	TRIRHENIUM HEPTAARSENIDE	1236
ReAsO4	RHENIUM ARSENATE	1237
ReBr3	RHENIUM TRIBROMIDE	1237
ReCl3	RHENIUM TRICHLORIDE	1238
ReO2	RHENIUM DIOXIDE	1238
ReO3	RHENIUM TRIOXIDE	1239
Re2O7	DIRHENIUM HEPTAOXIDE	1239
ReS2	RHENIUM DISULFIDE	1240
Re2S7	DIRHENIUM HEPTASULFIDE	1240
ReSi	RHENIUM SILICON	1241
ReSi2	RHENIUM 2-SILICON	1241
Re5Si3	5-RHENIUM 3-SILICON	1242
Re2Te5	DIRHENIUM PENTATELLURIDE	1242
Re2Y	2-RHENIUM YTTRIUM	1243
Rh	RHODIUM	1244
Rh[g]	RHODIUM (GAS)	1245
RhCl2[g]	RHODIUM DICHLORIDE (GAS)	1246
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RhCl3[g]	RHODIUM TRICHLORIDE (GAS)	1247
RhO2[g]	RHODIUM DIOXIDE (GAS)	1247
Rh2O3	DIRHODIUM TRIOXIDE	1248
Rh3U	3-RHODIUM URANIUM	1248
Rn[g]	RADON (MONOATOMIC GAS)	1249
Ru	RUTHENIUM	1250
Ru[g]	RUTHENIUM (GAS)	1251
RuCl3	RUTHENIUM TRICHLORIDE	1252
RuCl3[g]	RUTHENIUM TRICHLORIDE (GAS)	1252
RuCl4[g]	RUTHENIUM TETRACHLORIDE (GAS)	1253
RuF5	RUTHENIUM PENTAFLUORIDE	1253
RuO2	RUTHENIUM DIOXIDE	1254
RuO3[g]	RUTHENIUM TRIOXIDE (GAS)	1254
RuO4[g]	RUTHENIUM TETROXIDE (GAS)	1255
RuS2	RUTHENIUM DISULFIDE	1255
RuSe2	RUTHENIUM DISELENIDE	1256
Ru3U	3-RUTHENIUM URANIUM	1256
S	SULFUR (RHOMBIC,MONOCLINIC)	1257
S[g]	SULFUR (GAS)	1258
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S5[g]	SULFUR (GAS)	1262
S6[g]	SULFUR (GAS)	1263
S7[g]	SULFUR (GAS)	1264
S8[g]	SULFUR (GAS)	1265
SBr2[g]	SULFUR DIBROMIDE (GAS)	1266
S2Br2[g]	DISULFUR DIBROMIDE (GAS)	1267
SCl[g]	SULFUR MONOCHLORIDE (GAS)	1268
SCl2[g]	SULFUR DICHLORIDE (GAS)	1269
S2Cl[g]	DISULFUR CHLORIDE RADICAL (GAS)	1270
S2Cl2	DISULFUR DICHLORIDE	1270
S2Cl2[g]	DISULFUR DICHLORIDE (GAS)	1271
SF[g]	SULFUR MONOFLUORIDE (GAS)	1271
SF2[g]	SULFUR DIFLUORIDE (GAS)	1272
SF3[g]	SULFUR TRIFLUORIDE (GAS)	1273
SF4[g]	SULFUR TETRAFLUORIDE (GAS)	1274
SF5[g]	SULFUR PENTAFLUORIDE (GAS)	1275
SF6[g]	SULFUR HEXAFLUORIDE (GAS)	1276
SSF2[g]	SULFINOTHIOYL DIFLUORIDE (GAS)	1277
S2F10[g]	DISULFUR DECAFLUORIDE (GAS)	1278
SN[g]	SULFUR MONONITRIDE (GAS)	1279
SO[g]	SULFUR MONOXIDE (GAS)	1280
SO2[g]	SULFUR DIOXIDE (GAS)	1281
SO3[g]	SULFUR TRIOXIDE (GAS)	1282
S2O[g]	DISULFUR OXIDE (GAS)	1283
SOCl2[g]	SULFINYL DICHLORIDE (GAS)	1284
SO2Cl2[g]	SULFONYL DICHLORIDE (GAS)	1284
SOF2[g]	SULFINYL DIFLUORIDE (GAS)	1285
SO2F2[g]	SULFONYL DIFLUORIDE (GAS)	1286
Sb	ANTIMONY	1287
Sb[g]	ANTIMONY (GAS)	1288
Sb2[g]	ANTIMONY (GAS)	1289
Sb4[g]	ANTIMONY (GAS)	1290
SbBr3	ANTIMONY TRIBROMIDE	1290
SbBr3[g]	ANTIMONY TRIBROMIDE (GAS)	1291
SbCl[g]	ANTIMONY MONOCHLORIDE (GAS)	1291
SbCl3	ANTIMONY TRICHLORIDE	1292
SbCl3[g]	ANTIMONY TRICHLORIDE (GAS)	1292
SbCl5[g]	ANTIMONY PENTACHLORIDE (GAS)	1293
SbF[g]	ANTIMONY MONOFLUORIDE (GAS)	1293
SbF3	ANTIMONY TRIFLUORIDE	1294
SbF3[g]	ANTIMONY TRIFLUORIDE (GAS)	1294
SbH3[g]	ANTIMONY TRIHYDRIDE (GAS)	1295
SbI3	ANTIMONY TRIIODIDE	1295
SbI3[g]	ANTIMONY TRIIODIDE (GAS)	1296
SbO[g]	ANTIMONY OXIDE (GAS)	1296
Sb2O3	DIANTIMONY TRIOXIDE (CUBIC)	1297
Sb2O3[O]	DIANTIMONY TRIOXIDE (ORTHORHOMBIC)	1298
Sb2O4	DIANTIMONY TETRAOXIDE	1298
Sb2O5	DIANTIMONY PENTAOXIDE	1299
Sb4O6[g]	TETRAANTIMONY HEXAOXIDE (GAS)	1299
SbOCl	ANTIMONY CHLORIDE OXIDE	1300
SbS[g]	ANTIMONY SULFIDE (GAS)	1300
Sb2S3	DIANTIMONY TRISULFIDE (BLACK)	1301
Sb2S3[g]	DIANTIMONY TRISULFIDE (GAS)	1301
Sb2S4[g]	DIANTIMONY TETRASULFIDE (GAS)	1302
Sb3S2[g]	TRIANTIMONY DISULFIDE (GAS)	1303
Sb4S3[g]	TETRAANTIMONY TRISULFIDE (GAS)	1304
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Sb2Te3	DIANTIMONY TRITELLURIDE	1306
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ScBr3	SCANDIUM BROMIDE	1309
ScCl3	SCANDIUM CHLORIDE	1310
ScF3	SCANDIUM FLUORIDE	1311
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ScN	SCANDIUM NITRIDE	1313
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Se2Br2[g]	DISELENIUM DIBROMIDE (GAS)	1324
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Se2Cl2[g]	DISELENIUM DICHLORIDE (GAS)	1326
SeF[g]	SELENIUM FLUORIDE (GAS)	1327
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SiBr2[g]	SILICON DIBROMIDE (GAS)	1339
SiBr3[g]	SILICON TRIBROMIDE (GAS)	1340
SiBr4	SILICON TETRABROMIDE	1340
SiBr4[g]	SILICON TETRABROMIDE (GAS)	1341
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SiCl[g]	SILICON CHLORIDE (GAS)	1343
SiCl2[g]	SILICON DICHLORIDE (GAS)	1344
SiCl3[g]	SILICON TRICHLORIDE (GAS)	1345
SiCl4[g]	SILICON TETRACHLORIDE (GAS)	1346
SiF[g]	SILICON FLUORIDE (GAS)	1347
SiF2[g]	SILICON DIFLUORIDE (GAS)	1348
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SiI4[g]	SILICON TETRAIODIDE (GAS)	1356
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SiO2	SILICON DIOXIDE	1359
SiO2[CR]	SILICON DIOXIDE (CRISTOBALITE)	1360
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Si2Ta	2-SILICON TANTALUM	1365
Si3Ta5	3-SILICON 5-TANTALUM	1366
SiTh	SILICON THORIUM	1367
Si2Th	2-SILICON THORIUM	1368
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Si5Th3	5-SILICON 3-THORIUM	1370
SiTi	SILICON TITANIUM	1371
Si2Ti	2-SILICON TITANIUM	1372
Si3Ti5	3-SILICON 5-TITANIUM	1373
SiU	SILICON URANIUM	1374
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SiZr	SILICON ZIRCONIUM	1383
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SnBr2	TIN DIBROMIDE	1394
SnBr4	TIN TETRABROMIDE	1395
SnBr4[g]	TIN TETRABROMIDE (GAS)	1395
SnCl[g]	TIN MONOCHLORIDE (GAS)	1396
SnCl2	TIN DICHLORIDE	1396
SnCl2[g]	TIN DICHLORIDE (GAS)	1397
SnCl4	TIN TETRACHLORIDE	1397
SnCl4[g]	TIN TETRACHLORIDE (GAS)	1398
SnF[g]	TIN MONOFLUORIDE (GAS)	1398
SnF2	TIN DIFLUORIDE	1399
SnF2[g]	TIN DIFLUORIDE (GAS)	1399
SnH4[g]	TIN TETRAHYDRIDE (GAS)	1400
SnI2	TIN DIIODIDE	1400
SnI2[g]	TIN DIIODIDE (GAS)	1401
SnI4	TIN TETRAIODIDE	1401
SnI4[g]	TIN TETRAIODIDE (GAS)	1402
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SnO	TIN MONOXIDE	1403
SnO[g]	TIN MONOXIDE (GAS)	1403
SnO2	TIN DIOXIDE	1404
SnS	TIN MONOSULFIDE	1405
SnS[g]	TIN MONOSULFIDE (GAS)	1406
SnS2	TIN DISULFIDE	1406
Sn2S3	DITIN TRISULFIDE	1407
Sn3S4	TRITIN TETRASULFIDE	1407
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SnSe	TIN MONOSELENIDE	1409
SnSe[g]	TIN MONOSELENIDE (GAS)	1409
SnSe2	TIN DISELENIDE	1410
SnTe	TIN MONOTELLURIDE	1410
SnTe[g]	TIN MONOTELLURIDE (GAS)	1411
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SrBr2[g]	STRONTIUM BROMIDE (GAS)	1417
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Sr2TiO4	DISTRONTIUM TITANIUM TETRAOXIDE	1434
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TaB2	TANTALUM DIBORIDE	1445
TaBr5	TANTALUM PENTABROMIDE	1446
TaBr5[g]	TANTALUM PENTABROMIDE (GAS)	1446
TaC	TANTALUM MONOCARBIDE	1447
Ta2C	DITANTALUM CARBIDE	1448
TaCl[g]	TANTALUM MONOCHLORIDE (GAS)	1449
TaCl2[g]	TANTALUM DICHLORIDE (GAS)	1449
TaCl2.5	TANTALUM 2.5-CHLORIDE	1450
TaCl3	TANTALUM TRICHLORIDE	1450
TaCl3[g]	TANTALUM TRICHLORIDE (GAS)	1451
TaCl4	TANTALUM TETRACHLORIDE	1451
TaCl4[g]	TANTALUM TETRACHLORIDE (GAS)	1452
TaCl5	TANTALUM PENTACHLORIDE	1452
TaCl5[g]	TANTALUM PENTACHLORIDE (GAS)	1453
TaF5	TANTALUM PENTAFLUORIDE	1453
TaF5[g]	TANTALUM PENTAFLUORIDE (GAS)	1454
TaI5	TANTALUM PENTAIODIDE	1454
TaI5[g]	TANTALUM PENTAIODIDE (GAS)	1455
TaN	TANTALUM MONONITRIDE	1456
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TaOCl3	TANTALUM TRICHLORIDE OXIDE	1461
TaOCl3[g]	TANTALUM TRICHLORIDE OXIDE (GAS)	1461
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Tb	TERBIUM	1464
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TbO1.81	TERBIUM 1.81-OXIDE	1469
TbO2	TERBIUM DIOXIDE	1469
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TbSe[g]	TERBIUM SELENIDE (GAS)	1472
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Tc	TECHNETIUM	1474
Tc[g]	TECHNETIUM (GAS)	1476
TcO2	TECHNETIUM DIOXIDE	1477
TcO3	TECHNETIUM TRIOXIDE	1477
Tc2O7	DITECHNETIUM HEPTAOXIDE	1478
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Te[g]	TELLURIUM (GAS)	1480
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TeCl2[g]	TELLURIUM DICHLORIDE (GAS)	1482
TeCl4	TELLURIUM TETRACHLORIDE	1482
TeCl4[g]	TELLURIUM TETRACHLORIDE (GAS)	1483
TeF[g]	TELLURIUM MONOFLUORIDE (GAS)	1484
TeF2[g]	TELLURIUM DIFLUORIDE (GAS)	1485
TeF4[g]	TELLURIUM TETRAFLUORIDE (GAS)	1486
TeF5[g]	TELLURIUM PENTAFLUORIDE (GAS)	1487
TeF6[g]	TELLURIUM HEXAFLUORIDE (GAS)	1488
TeO[g]	TELLURIUM MONOXIDE (GAS)	1489
TeO2	TELLURIUM DIOXIDE	1490
TeO2[g]	TELLURIUM DIOXIDE (GAS)	1491
Te2O2[g]	DITELLURIUM DIOXIDE (GAS)	1492
Th	THORIUM	1493
Th[g]	THORIUM (GAS)	1495
ThBr4	THORIUM TETRABROMIDE	1496
ThBr4[g]	THORIUM TETRABROMIDE (GAS)	1497
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ThCl4[g]	THORIUM TETRACHLORIDE (GAS)	1500
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ThF3[g]	THORIUM TRIFLUORIDE (GAS)	1502
ThF4	THORIUM TETRAFLUORIDE	1503
ThF4[g]	THORIUM TETRAFLUORIDE (GAS)	1504
ThH2	THORIUM DIHYDRIDE	1504
ThI4	THORIUM TETRAIODIDE	1505
ThI4[g]	THORIUM TETRAIODIDE (GAS)	1506
ThN	THORIUM MONONITRIDE	1507
Th3N4	TRITHORIUM TETRANITRIDE	1508
Th2N2O	DITHORIUM DINITRIDE MONOXIDE	1509
ThO[g]	THORIUM MONOXIDE (GAS)	1510
ThO2	THORIUM DIOXIDE	1511
ThO2[g]	THORIUM DIOXIDE (GAS)	1512
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ThOF2	THORIUM DIFLUORIDE OXIDE	1514
ThOI2	THORIUM DIIODIDE OXIDE	1514
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ThS2	THORIUM DISULFIDE	1518
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TiBr2[g]	TITANIUM DIBROMIDE (GAS)	1525
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TiBr3[g]	TITANIUM TRIBROMIDE (GAS)	1526
TiBr4	TITANIUM TETRABROMIDE	1526
TiBr4[g]	TITANIUM TETRABROMIDE (GAS)	1527
TiC	TITANIUM MONOCARBIDE	1528
TiCl[g]	TITANIUM MONOCHLORIDE (GAS)	1529
TiCl2	TITANIUM DICHLORIDE	1530
TiCl2[g]	TITANIUM DICHLORIDE (GAS)	1531
TiCl3	TITANIUM TRICHLORIDE	1531
TiCl3[g]	TITANIUM TRICHLORIDE (GAS)	1532
TiCl4	TITANIUM TETRACHLORIDE	1532
TiCl4[g]	TITANIUM TETRACHLORIDE (GAS)	1533

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TiF3	TITANIUM TRIFLUORIDE	1535
TiF3[g]	TITANIUM TRIFLUORIDE (GAS)	1536
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TiF4[g]	TITANIUM TETRAFLUORIDE (GAS)	1537
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TiI[g]	TITANIUM MONOIODIDE (GAS)	1539
TiI2	TITANIUM DIIODIDE	1539
TiI2[g]	TITANIUM DIIODIDE (GAS)	1540
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TiI3[g]	TITANIUM TRIIODIDE (GAS)	1541
TiI4	TITANIUM TETRAIODIDE	1541
TiI4[g]	TITANIUM TETRAIODIDE (GAS)	1542
TiN	TITANIUM MONONITRIDE	1543
TiO	TITANIUM MONOXIDE	1544
TiO[g]	TITANIUM MONOXIDE (GAS)	1545
TiO2	TITANIUM DIOXIDE (RUTILE)	1546
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TiOCl[g]	TITANIUM CHLORIDE OXIDE (GAS)	1551
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TiS	TITANIUM MONOSULFIDE	1555
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TiS2	TITANIUM DISULFIDE	1557
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Tl[g]	THALLIUM (GAS)	1559
TlAsO4	THALLIUM ARSENATE	1559
TlBr	THALLIUM BROMIDE	1560
TlCl	THALLIUM CHLORIDE	1560
TlCl[g]	THALLIUM CHLORIDE (GAS)	1561
TlCl3	THALLIUM TRICHLORIDE	1561
Tl2Cl2[g]	DITHALLIUM DICHLORIDE (GAS)	1562
TlF	THALLIUM FLUORIDE	1562
TlF[g]	THALLIUM FLUORIDE (GAS)	1563
Tl2F2[g]	DITHALLIUM DIFLUORIDE (GAS)	1564
TlI	THALLIUM IODIDE	1565
TlI[g]	THALLIUM IODIDE (GAS)	1566
Tl2O	THALLIUM OXIDE	1566
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Tm[g]	THULIUM (GAS)	1572
TmBr3[g]	THULIUM TRIBROMIDE (GAS)	1573
TmCl3	THULIUM TRICHLORIDE	1573
TmCl3[g]	THULIUM TRICHLORIDE (GAS)	1574
TmF3	THULIUM TRIFLUORIDE	1575
TmF3[g]	THULIUM TRIFLUORIDE (GAS)	1576
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U[g]	URANIUM (GAS)	1581
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UB12	URANIUM DODECABORIDE	1583
UBr3	URANIUM TRIBROMIDE	1583
UBr4	URANIUM TETRABROMIDE	1584
UBr4[g]	URANIUM TETRABROMIDE (GAS)	1584
UBr5	URANIUM PENTABROMIDE	1585
UC	URANIUM MONOCARBIDE	1585
UC1.94	URANIUM 1.94-CARBIDE	1586
U2C3	DIURANIUM TRICARBIDE	1587
UCl3	URANIUM TRICHLORIDE	1588
UCl4	URANIUM TETRACHLORIDE	1589
UCl4[g]	URANIUM TETRACHLORIDE (GAS)	1590
UCl5	URANIUM PENTACHLORIDE	1590
UCl5[g]	URANIUM PENTACHLORIDE (GAS)	1591
UCl6	URANIUM HEXACHLORIDE	1591
UCl6[g]	URANIUM HEXACHLORIDE (GAS)	1592
UF3	URANIUM TRIFLUORIDE	1592
UF4	URANIUM TETRAFLUORIDE	1593
UF4[g]	URANIUM TETRAFLUORIDE (GAS)	1593
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UF4.5	URANIUM 4.5-FLUORIDE	1594
UF5	URANIUM PENTAFLUORIDE	1595
UF5[g]	URANIUM PENTAFLUORIDE (GAS)	1595
UF6	URANIUM HEXAFLUORIDE	1596
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UH3[B]	URANIUM TRIHYDRIDE (BETA)	1597
UI3	URANIUM TRIIODIDE	1597
UI4	URANIUM TETRAIODIDE	1598
UI4[g]	URANIUM TETRAIODIDE (GAS)	1598
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U4O9	TETRAURANIUM NONAOXIDE	1602
UOBr2	URANIUM DIBROMIDE OXIDE	1602
UOBr3	URANIUM TRIBROMIDE OXIDE	1603
UO2Br2	URANIUM DIBROMIDE DIOXIDE	1603
UOCl	URANIUM CHLORIDE OXIDE	1604
UOCl2	URANIUM DICHLORIDE OXIDE	1604
UOCl3	URANIUM TRICHLORIDE OXIDE	1605
UO2Cl2	URANIUM DICHLORIDE DIOXIDE	1605
UO2F2	URANIUM DIFLUORIDE DIOXIDE	1606
UO3*H2O	URANIUM TRIOXIDE MONOHYDRATE	1606
UO3*2H2O	URANIUM TRIOXIDE DIHYDRATE	1607
UO2(NO3)2	URANIUM DINITRATE DIOXIDE	1607
UO2SO4	URANIUM SULFATE DIOXIDE	1608
US	URANIUM SULFIDE	1608
US[g]	URANIUM SULFIDE (GAS)	1609
US2	URANIUM DISULFIDE	1610
U2S3	DIURANIUM TRISULFIDE	1611
U(SO4)2	URANIUM DISULFATE	1611
USe	URANIUM SELENIDE	1612
V	VANADIUM	1613
V[g]	VANADIUM (GAS)	1614

Formula	Name	Page
VB	VANADIUM BORIDE	1615
VB2	VANADIUM DIBORIDE	1616
V3B2	TRIVANADIUM DIBORIDE	1617
V3B4	TRIVANADIUM TETRABORIDE	1618
VBr2	VANADIUM DIBROMIDE	1618
VBr3	VANADIUM TRIBROMIDE	1619
VBr4[g]	VANADIUM TETRABROMIDE (GAS)	1619
VC0.88	VANADIUM 0.88-CARBIDE	1620
V2C	DIVANADIUM CARBIDE	1621
VCl2	VANADIUM DICHLORIDE	1621
VCl2[g]	VANADIUM DICHLORIDE (GAS)	1622
VCl3	VANADIUM TRICHLORIDE	1622
VCl4	VANADIUM TETRACHLORIDE	1623
VCl4[g]	VANADIUM TETRACHLORIDE (GAS)	1623
VF3	VANADIUM TRIFLUORIDE	1624
VF4	VANADIUM TETRAFLUORIDE	1624
VF5[g]	VANADIUM PENTAFLUORIDE (GAS)	1625
VI2	VANADIUM DIIODIDE	1625
VI2[g]	VANADIUM DIIODIDE (GAS)	1626
VI3	VANADIUM TRIIODIDE	1626
VN0.465	VANADIUM 0.465-NITRIDE	1627
VN	VANADIUM NITRIDE	1628
VO	VANADIUM OXIDE	1629
VO[g]	VANADIUM OXIDE (GAS)	1630
VO2[g]	VANADIUM DIOXIDE (GAS)	1631
V2O3	DIVANADIUM TRIOXIDE	1632
V2O4	DIVANADIUM TETRAOXIDE	1633
V2O5	DIVANADIUM PENTAOXIDE	1634
VOCl3	VANADIUM TRICHLORIDE OXIDE	1634
VOCl3[g]	VANADIUM TRICHLORIDE OXIDE (GAS)	1635
W	TUNGSTEN	1636
W[g]	TUNGSTEN (GAS)	1638
WBr[g]	TUNGSTEN BROMIDE (GAS)	1639
WBr5	TUNGSTEN PENTABROMIDE	1640
WBr5[g]	TUNGSTEN PENTABROMIDE (GAS)	1640
WBr6	TUNGSTEN HEXABROMIDE	1641
WBr6[g]	TUNGSTEN HEXABROMIDE (GAS)	1641
WC	TUNGSTEN CARBIDE	1642
W2C	DITUNGSTEN CARBIDE	1643
W(CO)6	TUNGSTEN HEXACARBONYL	1643
W(CO)6[g]	TUNGSTEN HEXACARBONYL (GAS)	1644
WCl[g]	TUNGSTEN CHLORIDE (GAS)	1645
WCl2	TUNGSTEN DICHLORIDE	1646
WCl2[g]	TUNGSTEN DICHLORIDE (GAS)	1646
WCl4	TUNGSTEN TETRACHLORIDE	1647
WCl4[g]	TUNGSTEN TETRACHLORIDE (GAS)	1647
WCl5	TUNGSTEN PENTACHLORIDE	1648
WCl5[g]	TUNGSTEN PENTACHLORIDE (GAS)	1648
WCl6	TUNGSTEN HEXACHLORIDE	1649
WCl6[g]	TUNGSTEN HEXACHLORIDE (GAS)	1650
W2Cl10[g]	DITUNGSTEN DECACHLORIDE (GAS)	1651
WF[g]	TUNGSTEN FLUORIDE (GAS)	1652
WF6[g]	TUNGSTEN HEXAFLUORIDE (GAS)	1653
WO[g]	TUNGSTEN OXIDE (GAS)	1654
WO2	TUNGSTEN DIOXIDE	1655
WO2[g]	TUNGSTEN DIOXIDE (GAS)	1656
WO2.72	TUNGSTEN 2.72-OXIDE	1657
WO2.90	TUNGSTEN 2.90-OXIDE	1658
WO2.96	TUNGSTEN 2.96-OXIDE	1659
WO3	TUNGSTEN TRIOXIDE	1660
WO3[g]	TUNGSTEN TRIOXIDE (GAS)	1661
W2O6[g]	DITUNGSTEN HEXAOXIDE (GAS)	1662
W3O8[g]	TRITUNGSTEN OCTAOXIDE	1663
W3O9[g]	TRITUNGSTEN NONAOXIDE (GAS)	1664
W4O12[g]	TETRATUNGSTEN DODECAOXIDE (GAS)	1665
WOCl4	TUNGSTEN TETRACHLORIDE OXIDE	1665
WOCl4[g]	TUNGSTEN TETRACHLORIDE OXIDE (GAS)	1666
WO2Cl2	TUNGSTEN DICHLORIDE DIOXIDE	1666
WO2Cl2[g]	TUNGSTEN DICHLORIDE DIOXIDE (GAS)	1667
WOF4	TUNGSTEN TETRAFLUORIDE OXIDE	1667
WOF4[g]	TUNGSTEN TETRAFLUORIDE OXIDE (GAS)	1668
WO2I2[g]	TUNGSTEN DIIODIDE DIOXIDE (GAS)	1668
WS2	TUNGSTEN DISULFIDE	1669
Xe[g]	XENON (GAS)	1669
Y	YTTRIUM	1670
Y[g]	YTTRIUM (GAS)	1671
YAsO4	YTTRIUM ARSENATE	1672
YCl3	YTTRIUM TRICHLORIDE	1672
YF3	YTTRIUM TRIFLUORIDE	1673
YI3	YTTRIUM TRIIODIDE	1674
YN	YTTRIUM NITRIDE	1674
Y2O3	DIYTTRIUM TRIOXIDE	1675
Y2Zr2O7	DIYTTRIUM DIZIRCONIUM HEPTAOXIDE	1676
Yb	YTTERBIUM	1677
Yb[g]	YTTERBIUM (GAS)	1678
YbCl2	YTTERBIUM DICHLORIDE	1678
YbCl3	YTTERBIUM TRICHLORIDE	1679
YbCl3[g]	YTTERBIUM TRICHLORIDE (GAS)	1679
Yb2O3	DIYTTERBIUM TRIOXIDE	1680
Zn	ZINC	1681
Zn[g]	ZINC (GAS)	1682
Zn3As2	ZINC ARSENIDE	1683
Zn3(AsO4)2	ZINC ARSENATE	1684
ZnBr2	ZINC BROMIDE	1684
ZnBr2[g]	ZINC BROMIDE (GAS)	1685
ZnCO3	ZINC CARBONATE	1685
ZnCl2	ZINC CHLORIDE	1686
ZnCl2[g]	ZINC CHLORIDE (GAS)	1686
ZnF2	ZINC FLUORIDE	1687
ZnF2[g]	ZINC FLUORIDE (GAS)	1688
ZnI2	ZINC IODIDE	1688
ZnI2[g]	ZINC IODIDE (GAS)	1689
Zn3N2	ZINC NITRIDE	1689
ZnO	ZINC OXIDE	1690
Zn3O(SO4)2	TRIZINC DISULFATE OXIDE	1691
ZnSiO3	ZINC METASILICATE	1691
Zn2SiO4	ZINC ORTHOSILICATE (WILLEMITE)	1692
Zn2TiO4	DIZINC TITANIUM TETRAOXIDE	1693
ZnP2	ZINC DIPHOSPHIDE	1694
Zn3P2	TRIZINC DIPHOSPHIDE	1695
Zn3(PO4)2	ZINC PHOSPHATE	1696
ZnS	ZINC SULFIDE (WURTZITE)	1697
ZnS[g]	ZINC SULFIDE (GAS)	1698
ZnS[S]	ZINC SULFIDE (SPHALERITE)	1698
ZnSO4	ZINC SULFATE	1699
ZnSO4*H2O	ZINC SULFATE MONOHYDRATE	1699

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ZnSO4*2H2O	ZINC SULFATE DIHYDRATE	1700	ZrCl4	ZIRCONIUM TETRACHLORIDE	1718
ZnSO4*6H2O	ZINC SULFATE HEXAHYDRATE	1700	ZrCl4[g]	ZIRCONIUM TETRACHLORIDE (GAS)	1719
ZnSO4*7H2O	ZINC SULFATE HEPTAHYDRATE	1701	ZrF[g]	ZIRCONIUM MONOFLUORIDE (GAS)	1720
ZnSe	ZINC SELENIDE	1701	ZrF2	ZIRCONIUM DIFLUORIDE	1721
ZnSe[g]	ZINC SELENIDE (GAS)	1702	ZrF2[g]	ZIRCONIUM DIFLUORIDE (GAS)	1722
ZnSeO3	ZINC SELENITE	1702	ZrF3	ZIRCONIUM TRIFLUORIDE	1722
ZnTe	ZINC TELLURIDE	1703	ZrF3[g]	ZIRCONIUM TRIFLUORIDE (GAS)	1723
ZnTe[g]	ZINC TELLURIDE (GAS)	1703	ZrF4	ZIRCONIUM TETRAFLUORIDE	1724
ZnWO4	ZINC TUNGSTATE	1704	ZrF4[g]	ZIRCONIUM TETRAFLUORIDE (GAS)	1725
Zr	ZIRCONIUM	1705	ZrH[g]	ZIRCONIUM HYDRIDE (GAS)	1726
Zr[g]	ZIRCONIUM (GAS)	1707	ZrI[g]	ZIRCONIUM MONOIODIDE (GAS)	1727
ZrB2	ZIRCONIUM DIBORIDE	1708	ZrI2	ZIRCONIUM DIIODIDE	1728
ZrBr[g]	ZIRCONIUM MONOBROMIDE (GAS)	1709	ZrI2[g]	ZIRCONIUM DIIODIDE (GAS)	1729
ZrBr2	ZIRCONIUM DIBROMIDE	1710	ZrI3	ZIRCONIUM TRIIODIDE	1729
ZrBr2[g]	ZIRCONIUM DIBROMIDE (GAS)	1711	ZrI3[g]	ZIRCONIUM TRIIODIDE (GAS)	1730
ZrBr3	ZIRCONIUM TRIBROMIDE	1711	ZrI4	ZIRCONIUM TETRAIODIDE	1730
ZrBr3[g]	ZIRCONIUM TRIBROMIDE (GAS)	1712	ZrI4[g]	ZIRCONIUM TETRAIODIDE (GAS)	1731
ZrBr4	ZIRCONIUM TETRABROMIDE	1712	ZrN	ZIRCONIUM NITRIDE	1732
ZrBr4[g]	ZIRCONIUM TETRABROMIDE (GAS)	1713	ZrO[g]	ZIRCONIUM MONOXIDE (GAS)	1733
ZrC	ZIRCONIUM CARBIDE	1714	ZrO2	ZIRCONIUM DIOXIDE	1734
ZrCl[g]	ZIRCONIUM MONOCHLORIDE (GAS)	1715	ZrO2[g]	ZIRCONIUM DIOXIDE (GAS)	1735
ZrCl2	ZIRCONIUM DICHLORIDE	1716	ZrSiO4	ZIRCONIUM ORTHOSILICATE	1736
ZrCl2[g]	ZIRCONIUM DICHLORIDE (GAS)	1717	ZrS[g]	ZIRCONIUM MONOSULFIDE (GAS)	1737
ZrCl3	ZIRCONIUM TRICHLORIDE	1717	ZrS2	ZIRCONIUM DISULFIDE	1738
ZrCl3[g]	ZIRCONIUM TRICHLORIDE (GAS)	1718	e-[g]	ELECTRON (GAS)	1739

13 List of chemical symbols of substances according to the alphabetical order of elements (modified Hill indexing system)

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Ag1	1	Al1H2Na1O7Si2	990	Al2H6O6	57	As1H3[g]	83
Ag1[g]	2	Al1H3	38	Al2I6[g]	40	As1I3	83
Ag1Br1	3	Al1H3O3	55	Al2La1	41	As1I3[g]	84
Ag1Br1[g]	4	Al1H6K1O11S2	738	Al2Mg1O4	869	As1In1	702
Ag1Br1O3	4	Al1I3	39	Al2Mn1O4	903	As1In1O4	702
Ag1Cl1	6	Al1I3[g]	39	Al2Ni1O4	1069	As1K3O4	739
Ag1Cl1[g]	7	Al1K1O4Si1	763	Al2O12S3	67	As1La1O4	781
Ag1Cl1O3	7	Al1K1O6Si2	763	Al2O1[g]	46	As1Li3O4	802
Ag1F1	8	Al1K1O8S2	738	Al2O2[g]	47	As1Mn1	889
Ag1F1[g]	9	Al1K1O8Si3	764	Al2O3	48	As1Mo1O4	920
Ag1I1	10	Al1K1O8Si3[A]	764	Al2O3[C]	49	As1Na3	961
Ag1I1[g]	11	Al1K1O8Si3[S]	765	Al2O3[D]	50	As1Na3O4	961
Ag1N1O3	11	Al1Li1	41	Al2O3[K]	51	As1Ni1	1054
Ag1P2	12	Al1Li1O2	829	Al2O4Sr1	1428	As1O1[g]	84
Ag1P3	13	Al1Li1O4Si1	830	Al2O5Si1	58	As1O4Rb3	1216
Ag2Cr1O4	8	Al1Li1O6Si2	830	Al2O5Si1[A]	59	As1O4Re1	1237
Ag2O1	12	Al1Li1O6Si2[B]	831	Al2O5Si1[S]	60	As1O4Sc1	1309
Ag2O4S1	14	Al1N1	42	Al2O5Ti1	63	As1O4Tl1	1559
Ag2O4W1	16	Al1Na1O2	986	Al2S3	67	As1O4Y1	1672
Ag2S1	13	Al1Na1O4Si1	987	Al2Se2[g]	69	As1S1[g]	87
Ag2Se1	15	Al1Na1O6Si2	988	Al2Se3	69	As1Se1[g]	90
Ag2Te1	16	Al1Na1O6Si2[D]	988	Al2Te3	70	As1Te1[g]	91
Ag3As1O4	3	Al1Na1O8Si3	989	Al2U1	72	As2[g]	78
Al1	17	Al1Na1O8Si3[A]	989	Al3H2K1O12Si3	766	As2Ba3O8	129
Al14Ca12O33	309	Al1Ni1	42	Al3Ni1	43	As2Be3O8	165
Al18B4O33	52	Al1Ni3	43	Al3Ni2	44	As2Ca3O8	282
Al1[g]	18	Al1O1[g]	44	Al3Th1	71	As2Cd3	358
Al1As1	19	Al1O2[g]	45	Al3Ti1	72	As2Cd3O8	358
Al1As1O4	19	Al1O4P1	65	Al3U1	73	As2Co3O8	396
Al1B12	21	Al1P1	64	Al4B2O9	52	As2Cr3O8	420
Al1B2	20	Al1S1[g]	66	Al4Ca1	27	As2Cu3O8	468
Al1Br1[g]	22	Al1Sb1	68	Al4Ca1O7	307	As2Fe3O8	538
Al1Br3	23	Al1Te1[g]	70	Al4Ce1	28	As2Hg3O8	674
Al1Br3[g]	24	Al1Ti1	71	Al4Mg2O18Si5	57	As2Mg3O8	848
Al1Ce1O3	384	Al2Ba1O4	149	Al4U1	73	As2Mn3O8	889
Al1Cl1[g]	29	Al2Ba3O6	150	Al5Co2	33	As2Ni3O8	1055
Al1Cl1O1	53	Al2Be1O4	180	Al6Be1O10	181	As2Ni5	1054
Al1Cl1O1[g]	53	Al2Br6[g]	25	Al6O13Si2	61	As2O3	85
Al1Cl2[g]	30	Al2Ca1	27	Am1	74	As2O3[A]	85
Al1Cl3	30	Al2Ca1H4O10Si2	313	Am1[g]	75	As2O4Ti3	1522
Al1Cl3[g]	31	Al2Ca1O4	306	Ar1[g]	76	As2O5	86
Al1Cl3H12O6	32	Al2Ca1O6Si1	310	As1	77	As2O8Pb3	1129
Al1Cl4K1	736	Al2Ca1O8Si2	311	As1[g]	77	As2O8Sn3	1394
Al1Cl4Na1	958	Al2Ca2O5	308	As1Au3O4	94	As2O8Sr3	1414
Al1Cl6K3	737	Al2Ca2O7Si1	312	As1Bi1O4	192	As2O8Zn3	1684
Al1Cl6Na3	959	Al2Ca3H12O12	310	As1Br3[g]	79	As2S2	87
Al1Co1	33	Al2Ca3O12Si3	312	As1Cl3	80	As2S3	88
Al1F1[g]	34	Al2Ca3O6	309	As1Cl3[g]	80	As2Se3	90
Al1F1O1[g]	54	Al2Cd1O4	363	As1Cr1O4	420	As2Te3	91
Al1F2[g]	35	Al2Ce1	28	As1Cs3O4	448	As2Zn3	1683
Al1F2O1[g]	55	Al2Cl6[g]	32	As1Cu3	467	As3[g]	78
Al1F3	36	Al2F6[g]	38	As1Cu3O4	467	As4[g]	79
Al1F3[g]	37	Al2Fe1O4	565	As1F3	81	As4O6[g]	86
Al1F4Li1[g]	800	Al2H2O4	56	As1F3[g]	81	As4S4	88
Al1F6K3	737	Al2H2O4[B]	56	As1F5[g]	82	As4S4[g]	89
Al1F6Li3	801	Al2H4O9Si2	61	As1Fe1O4	538	As4S4[R]	89
Al1F6Na3	960	Al2H4O9Si2[D]	62	As1Ga1	588	As5Ni11	1055
Al1H24K1O20S2	739	Al2H4O9Si2[H]	62	As1Ga1O4	588	As7Re3	1236

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Au1	92	B1S1[g]	126	Ba1Mo1O4	146	Bi1Cl3[g]	196
Au1[g]	93	B1Ti1	1522	Ba1N2O6	147	Bi1F1[g]	196
Au1Br1	94	B1V1	1615	Ba1O1	148	Bi1F3	197
Au1Cd1	95	B1[GL]	106	Ba1O2	149	Bi1F3[g]	197
Au1Cl1	95	B2Be3O6	182	Ba1O3Si1	153	Bi1I1	198
Au1Cl3	96	B2Ca1O4	313	Ba1O3Ti1	157	Bi1I1[g]	198
Au1Cu1	96	B2Ca2O5	315	Ba1O3Zr1	159	Bi1I3	199
Au1Cu3	97	B2Ca3O6	316	Ba1O4S1	161	Bi1I3[g]	199
Au1F3	97	B2Cr1	421	Ba1O4U1	158	Bi1K3	200
Au1H3O3	99	B2H6[g]	117	Ba1O4W1	162	Bi1Mn1	200
Au1I1	98	B2Hf1	664	Ba1O5Si2	154	Bi1Ni1	201
Au1S1[g]	100	B2Mg1	849	Ba1S1	160	Bi1U1	205
Au1Sb2	100	B2Mn1	890	Ba1Te1	162	Bi2[g]	192
Au1Se1	101	B2Nb1	1013	Ba2O4Si1	155	Bi2O12S3	203
Au1Se1[B]	101	B2O3	122	Ba2O4Ti1	158	Bi2O3	202
Au1Sn1	102	B2O3[g]	123	Ba2O8Si3	156	Bi2S3	203
Au1Sn2	102	B2O3[GL]	124	Ba2Sn1	161	Bi2Se3	204
Au1Sn4	103	B2O4Pb1	1151	Ba3N2	146	Bi2Te3	204
Au1Te2	103	B2S3	126	Be1	163	Bi2U1	205
Au2O3	98	B2Ta1	1445	Be1[g]	164	Bi4U3	206
Au2P3	99	B2Ti1	1523	Be1Br1[g]	165	Br1[g]	207
B1	104	B2U1	1582	Be1Br2	166	Br1Ca1[g]	283
B12U1	1583	B2V1	1616	Be1Br2[g]	166	Br1Cs1	449
B1[g]	105	B2V3	1617	Be1Cl1[g]	168	Br1Cs1[g]	450
B1Br1[g]	107	B2Zr1	1708	Be1Cl2	169	Br1Cu1	469
B1Br2[g]	108	B3Na1O5	964	Be1Cl2[g]	170	Br1Cu1[g]	470
B1Br3	108	B3Ni4	1056	Be1F1[g]	172	Br1H1[g]	643
B1Br3[g]	109	B4Ca1O7	314	Be1F2	173	Br1Hg1[g]	675
B1Cl1[g]	111	B4K2O7	767	Be1F2[g]	174	Br1In1	703
B1Cl1O1[g]	125	B4Li2O7	832	Be1F3Li1	803	Br1In1[g]	703
B1Cl2[g]	112	B4Mg1	849	Be1F3Li1[g]	804	Br1K1	742
B1Cl3[g]	113	B4Na2O7	964	Be1F4Li2	805	Br1K1[g]	743
B1Co1	396	B4O7Pb1	1151	Be1H1[g]	175	Br1Li1	806
B1Co2	397	B4U1	1582	Be1H1O1[g]	183	Br1Li1[g]	807
B1Cr1	421	B4V3	1618	Be1H2O2	183	Br1Mg1[g]	850
B1F1[g]	114	B6Ce1	373	Be1H2O2[g]	184	Br1N1O1[g]	953
B1F2[g]	115	B6K2O10	767	Be1H2O2[B]	184	Br1Na1	965
B1F3[g]	116	B6Li2O10	833	Be1H4O6S1	188	Br1Na1[g]	966
B1Fe1	539	B8K2O13	768	Be1H8O8S1	189	Br1Ni1[g]	1057
B1Fe2	540	Ba1	127	Be1I1[g]	176	Br1O1Pu1	1208
B1H1[g]	117	Ba1[g]	128	Be1I2	176	Br1Pb1[g]	1130
B1H1O2	641	Ba1Br2	130	Be1I2[g]	177	Br1Rb1	1216
B1H1O2[g]	641	Ba1Br2[g]	131	Be1O1	179	Br1Rb1[g]	1217
B1H3O3	642	Ba1Cl1[g]	134	Be1O4S1	188	Br1Si1[g]	1338
B1H3O3[g]	642	Ba1Cl2	135	Be1O4W1	189	Br1Sr1[g]	1415
B1I1[g]	118	Ba1Cl2[g]	136	Be1S1	186	Br1Ti1[g]	1524
B1I2[g]	119	Ba1Cr1O4	137	Be1S1[g]	187	Br1Tl1	1560
B1I3[g]	120	Ba1F1[g]	138	Be2Cl4[g]	171	Br1W1[g]	1639
B1K1O2	740	Ba1F2	139	Be2O4Si1	185	Br1Zr1[g]	1709
B1K1O2[g]	741	Ba1F2[g]	140	Be3N2	178	Br2	207
B1Li1O2	802	Ba1H1[g]	141	Bi1	190	Br2[g]	208
B1Li1O2[g]	803	Ba1H2	142	Bi1[g]	191	Br2Ca1	284
B1Mn1	890	Ba1H2O2	151	Bi1Br1[g]	193	Br2Ca1[g]	285
B1N1	121	Ba1H2O2[g]	152	Bi1Br3	194	Br2Cd1	359
B1Na1O2	962	Ba1Hf1O3	152	Bi1Br3[g]	194	Br2Co1	397
B1Na1O2[g]	963	Ba1I1[g]	143	Bi1Cl1[g]	195	Br2Cr1	422
B1Ni1	1056	Ba1I2	144	Bi1Cl1O1	202	Br2Cu1	470
B1P1	125	Ba1I2[g]	145	Bi1Cl3	195	Br2Eu1	526

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Br2Eu1[g]	526	Br3Pr1	1173	C1Ag1N1	5	C1N1Na1[g]	969
Br2Fe1	541	Br3Pr1[g]	1174	C1Ag2O3	5	C1N1O1[g]	936
Br2Fe1[g]	542	Br3Pt1	1186	C1B4	110	C1N2[g]	269
Br2Hg1	675	Br3Pu1	1195	C1Ba1O3	133	C1Na2O3	971
Br2Hg1[g]	676	Br3Re1	1237	C1Be2	167	C1Nb1	1017
Br2Hg2	676	Br3Sb1	1290	C1Br1[g]	214	C1Nb2	1018
Br2K2[g]	744	Br3Sb1[g]	1291	C1Br4[g]	215	C1Ni1O3	1059
Br2Li2[g]	808	Br3Sc1	1309	C1Ca1N2	287	C1Ni3	1058
Br2Mg1	851	Br3Si1[g]	1340	C1Ca1O3	287	C1O1[g]	271
Br2Mg1[g]	852	Br3Tb1[g]	1466	C1Ca1O3[A]	288	C1O1S1[g]	277
Br2Mn1	891	Br3Ti1	1525	C1Cd1O3	359	C1O2[g]	272
Br2Mn1[g]	892	Br3Ti1[g]	1526	C1Cl1[g]	216	C1O3Pb1	1133
Br2Na2[g]	967	Br3Tm1[g]	1573	C1Cl1O1[g]	273	C1O3Rb2	1218
Br2Ni1	1057	Br3U1	1583	C1Cl2[g]	217	C1O3Sr1	1418
Br2Ni1[g]	1058	Br3V1	1619	C1Cl2O1[g]	274	C1O3Zn1	1685
Br2O1Th1	1513	Br3Zr1	1711	C1Cl3[g]	218	C1O4Pb2	1152
Br2O1U1	1602	Br3Zr1[g]	1712	C1Cl4	218	C1S1[g]	278
Br2O2U1	1603	Br4Cr1[g]	423	C1Cl4[g]	219	C1S2[g]	279
Br2Pb1	1131	Br4Fe2[g]	543	C1Co1O3	398	C1Si1	1342
Br2Pb1[g]	1132	Br4Ge1[g]	620	C1Cs2O3	450	C1Ta1	1447
Br2Pt1	1186	Br4Hf1	664	C1Cu1N1	471	C1Ta2	1448
Br2S1[g]	1266	Br4Hf1[g]	665	C1F1[g]	222	C1Ti1	1528
Br2S2[g]	1267	Br4Mg2[g]	853	C1F1O1[g]	275	C1U1	1585
Br2Se1[g]	1323	Br4Pb1[g]	1133	C1F2[g]	223	C1V2	1621
Br2Se2[g]	1324	Br4Pt1	1187	C1F2O1[g]	276	C1W1	1642
Br2Si1[g]	1339	Br4Si1	1340	C1F3[g]	224	C1W2	1643
Br2Sn1	1394	Br4Si1[g]	1341	C1F4[g]	225	C1Zr1	1714
Br2Sr1	1416	Br4Sn1	1395	C1Fe1O3	544	C1[D]	211
Br2Sr1[g]	1417	Br4Sn1[g]	1395	C1Fe3	544	C2[g]	212
Br2Ti1	1524	Br4Te1	1481	C1H1[g]	228	C2Ba1	132
Br2Ti1[g]	1525	Br4Th1	1496	C1H1Cl3[g]	256	C2Ca1	286
Br2V1	1618	Br4Th1[g]	1497	C1H1N1[g]	644	C2Ca1Mg1O6	288
Br2Zn1	1684	Br4Ti1	1526	C1H1N1O1[g]	648	C2Ce1	375
Br2Zn1[g]	1685	Br4Ti1[g]	1527	C1H1Na1O3	979	C2Cl4[g]	220
Br2Zr1	1710	Br4U1	1584	C1H1O1[g]	259	C2Cl6[g]	221
Br2Zr1[g]	1711	Br4U1[g]	1584	C1H2[g]	229	C2Cr3	423
Br3Ce1	374	Br4V1[g]	1619	C1H2Cl2[g]	257	C2F4[g]	226
Br3Ce1[g]	375	Br4Zr1	1712	C1H2O1[g]	260	C2F6[g]	227
Br3Cr1	422	Br4Zr1[g]	1713	C1H2O2	260	C2H2[g]	232
Br3Cu3[g]	471	Br5Nb1	1014	C1H2O2[g]	261	C2H2O1[g]	262
Br3Dy1[g]	509	Br5Nb1[g]	1014	C1H2S3	267	C2H3Cl1[g]	258
Br3Er1[g]	517	Br5Ta1	1446	C1H3[g]	230	C2H4[g]	233
Br3Eu1	527	Br5Ta1[g]	1446	C1H3Cl1[g]	257	C2H4O1[g]	263
Br3Fe1	542	Br5U1	1585	C1H4[g]	231	C2H4O2	263
Br3Ga1	589	Br5W1	1640	C1H4O1	261	C2H4O2[g]	264
Br3Gd1	608	Br5W1[g]	1640	C1H4O1[g]	262	C2H5Cl1[g]	258
Br3Gd1[g]	609	Br6W1	1641	C1Hf1	666	C2H6[g]	233
Br3Ho1	692	Br6W1[g]	1641	C1K1N1	745	C2H6O1	264
Br3Ho1[g]	693	C0.749Nb1	1015	C1K1N1[g]	746	C2H6O1[g]	265
Br3In1	704	C0.877Nb1	1016	C1K2O3	748	C2K2N2[g]	747
Br3Ir1	729	C0.88Pu1	1196	C1Li2O3	809	C2Mg1	854
Br3La1	781	C0.88V1	1620	C1Mg1O3	855	C2N2[g]	270
Br3La1[g]	782	C1	209	C1Mn1O3	894	C2N2Na2[g]	970
Br3Nd1	1036	C1.94Th1	1498	C1Mn3	892	C2Pu1	1197
Br3Nd1[g]	1037	C1.94U1	1586	C1Mo1	920	C2Sm1	1387
Br3O1P1[g]	1120	C10H22	255	C1Mo2	921	C2Sr1	1418
Br3O1U1	1603	C10H22[g]	256	C1N1[g]	268	C3[g]	213
Br3P1[g]	1108	C1[g]	210	C1N1Na1	968	C3Al4	26

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C3Ce2	376	C8H18	253	Ca1Te1	353	Ce1F3[g]	379
C3Cr7	424	C8H18[g]	253	Ca1Zn1	356	Ce1H2	379
C3H4[g]	234	C9H16[g]	254	Ca1Zn2	356	Ce1I3	380
C3H4[PY][g]	234	C9H20	254	Ca2Fe2O5	317	Ce1I3[g]	381
C3H6[g]	235	C9H20[g]	255	Ca2H2.32O5.16Si1	330	Ce1Mg1	381
C3H6O1	265	Ca1	280	Ca2H2Mg5O24Si8	324	Ce1N1	382
C3H6O1[g]	266	Ca1[g]	281	Ca2H5O10.5Si3	330	Ce1O2	383
C3H6[P][g]	235	Ca1Cl1[g]	289	Ca2Mg1O7Si2	323	Ce1S1	385
C3H8[g]	236	Ca1Cl2	290	Ca2O4Si1	327	Ce1Te1[g]	387
C3Mg2	855	Ca1Cl2[g]	291	Ca2O4Si1[B]	328	Ce2O12S3	387
C3Mn7	893	Ca1Cl2O1	316	Ca2O7P2	341	Ce2O3	383
C3Pu2	1198	Ca1F1[g]	292	Ca2O7V2	354	Ce2S3	386
C3U2	1587	Ca1F2	293	Ca2Pb1	343	Ce3S4	386
C4H10[g]	238	Ca1F2[g]	294	Ca2Si1	351	Cl10W2[g]	1651
C4H6[g]	236	Ca1Fe2O4	317	Ca2Sn1	352	Cl1[g]	388
C4H8[g]	237	Ca1H1[g]	295	Ca3H6O10Si2	331	Cl1Co1[g]	398
C4H8[I][g]	237	Ca1H1O1[g]	318	Ca3Mg1O8Si2	324	Cl1Cs1	451
C4Mn15	893	Ca1H1O3.5S1	348	Ca3N2	301	Cl1Cs1[g]	452
C4Ni1O4[g]	1059	Ca1H1O4.5S1	348	Ca3O5Si1	328	Cl1Cu1	472
C5Fe1O5	545	Ca1H1O4P1	297	Ca3O6W1	355	Cl1Cu1[g]	473
C5Fe1O5[g]	545	Ca1H2	296	Ca3O7Si2	329	Cl1D1[g]	500
C5H10[g]	239	Ca1H2O2	319	Ca3O7Ti2	335	Cl1F1[g]	390
C5H12[g]	240	Ca1H4N2O8	302	Ca3O8P2	342	Cl1F3[g]	391
C5H8[g]	238	Ca1H4O6S1	349	Ca3O8V2	354	Cl1Fe1[g]	546
C5H8[P][g]	239	Ca1H4O7Si2	329	Ca3P2	340	Cl1Fe1O1	565
C6Cr1O6	425	Ca1H5O6P1	297	Ca3Sb2	349	Cl1Ga1[g]	589
C6Cr23	425	Ca1H6N2O9	303	Ca4H3O11.5Si3	331	Cl1Gd1O1	617
C6H10	241	Ca1H8N2O10	303	Ca4O10Ti3	336	Cl1Ge1[g]	620
C6H10[g]	242	Ca1Hf1O3	319	Ca5H11O22.5Si6	332	Cl1H1[g]	645
C6H12	242	Ca1I1[g]	298	Ca5H21O27.5Si6	333	Cl1H1Mg1O1	871
C6H12[g]	243	Ca1I2	299	Ca5H6O20Si6	332	Cl1H4N1	943
C6H12[M]	243	Ca1I2[g]	300	Ca6H2O19Si6	333	Cl1H4N1O4	944
C6H12[M][g]	244	Ca1Mg1O2	320	Cd1	357	Cl1Hg1[g]	677
C6H14	244	Ca1Mg1O4Si1	321	Cd11U1	370	Cl1In1	704
C6H14[g]	245	Ca1Mg1O6Si2	322	Cd1[g]	357	Cl1In1[g]	705
C6H6	240	Ca1Mg2	300	Cd1Cl2	360	Cl1K1	749
C6H6[g]	241	Ca1Mo1O4	301	Cd1F2	361	Cl1K1[g]	750
C6H6O1	266	Ca1N2O6	302	Cd1Ga2O4	364	Cl1K1O4	751
C6H6O1[g]	267	Ca1O1	304	Cd1H2O2	364	Cl1La1O1	790
C6Mo1O6	921	Ca1O1[g]	305	Cd1I2	362	Cl1Li1	810
C6Mo1O6[g]	922	Ca1O2	306	Cd1O1	362	Cl1Li1[g]	811
C6O6W1	1643	Ca1O3S1	346	Cd1O1[g]	363	Cl1Li1O1[g]	813
C6O6W1[g]	1644	Ca1O3Si1	325	Cd1O3Se1	369	Cl1Li1O4	814
C7H14	246	Ca1O3Si1[B]	326	Cd1O3Si1	365	Cl1Mg1[g]	856
C7H14[g]	247	Ca1O3Ti1	334	Cd1O3Ti1	365	Cl1N1O1[g]	954
C7H14[M]	247	Ca1O3Zr1	339	Cd1O4S1	367	Cl1N1O2[g]	955
C7H14[M][g]	248	Ca1O4S1	347	Cd1O4W1	370	Cl1Na1	972
C7H16	248	Ca1O4U1	338	Cd1S1	366	Cl1Na1[g]	973
C7H16[g]	249	Ca1O4W1	355	Cd1S1[g]	366	Cl1Na1O4	974
C7H8	245	Ca1O5Si1Ti1	337	Cd1Sb1	368	Cl1Nb1O2	1031
C7H8[g]	246	Ca1O6V2	353	Cd1Se1	368	Cl1Nd1O1	1044
C8H10	249	Ca1Pb1	343	Cd1Te1	369	Cl1Ni1[g]	1060
C8H10[g]	250	Ca1S1	344	Ce1	371	Cl1O1[g]	392
C8H10[E]	250	Ca1S1[g]	345	Ce1[g]	372	Cl1O1Pu1	1209
C8H10[E][g]	251	Ca1Se1	350	Ce1Cl3	376	Cl1O1Sb1	1300
C8H14[g]	251	Ca1Si1	350	Ce1Cl3[g]	377	Cl1O1Ti1[g]	1551
C8H16	252	Ca1Si2	351	Ce1Cr1O3	384	Cl1O1U1	1604
C8H16[g]	252	Ca1Sn1	352	Ce1F3	378	Cl1O2Ta1	1462

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Cl1Pb1[g]	1134	Cl2Pb1	1135	Cl3Ir1	729	Cl4Pb1[g]	1137
Cl1Rb1	1219	Cl2Pb1[g]	1136	Cl3La1	783	Cl4Pt1	1188
Cl1Rb1[g]	1220	Cl2Pd1	1167	Cl3La1[g]	784	Cl4Ru1[g]	1253
Cl1S1[g]	1268	Cl2Pt1	1187	Cl3Nb1	1020	Cl4Se1	1325
Cl1S2[g]	1270	Cl2Rb2[g]	1221	Cl3Nb1O1	1030	Cl4Si1[g]	1346
Cl1Sb1[g]	1291	Cl2Rh1[g]	1246	Cl3Nb1O1[g]	1031	Cl4Sn1	1397
Cl1Si1[g]	1343	Cl2S1[g]	1269	Cl3Nd1	1038	Cl4Sn1[g]	1398
Cl1Sn1[g]	1396	Cl2S2	1270	Cl3Nd1[g]	1039	Cl4Ta1	1451
Cl1Sr1[g]	1419	Cl2S2[g]	1271	Cl3Np1	1088	Cl4Ta1[g]	1452
Cl1Ta1[g]	1449	Cl2Se1[g]	1325	Cl3O1P1	1120	Cl4Te1	1482
Cl1Ti1[g]	1529	Cl2Se2	1326	Cl3O1P1[g]	1121	Cl4Te1[g]	1483
Cl1Tl1	1560	Cl2Se2[g]	1326	Cl3O1Ta1	1461	Cl4Th1	1499
Cl1Tl1[g]	1561	Cl2Si1[g]	1344	Cl3O1Ta1[g]	1461	Cl4Th1[g]	1500
Cl1W1[g]	1645	Cl2Sm1	1387	Cl3O1U1	1605	Cl4Ti1	1532
Cl1Zr1[g]	1715	Cl2Sn1	1396	Cl3O1V1	1634	Cl4Ti1[g]	1533
Cl2.33Nb1	1019	Cl2Sn1[g]	1397	Cl3O1V1[g]	1635	Cl4U1	1589
Cl2.5Ta1	1450	Cl2Sr1	1420	Cl3P1[g]	1109	Cl4U1[g]	1590
Cl2.67Nb1	1019	Cl2Sr1[g]	1421	Cl3Pr1	1175	Cl4V1	1623
Cl2[g]	389	Cl2Ta1[g]	1449	Cl3Pr1[g]	1176	Cl4V1[g]	1623
Cl2Co1	399	Cl2Te1[g]	1482	Cl3Pt1	1188	Cl4W1	1647
Cl2Co1[g]	400	Cl2Ti1	1530	Cl3Pu1	1199	Cl4W1[g]	1647
Cl2Cr1	426	Cl2Ti1[g]	1531	Cl3Re1	1238	Cl4Zr1	1718
Cl2Cr1O2[g]	437	Cl2Tl2[g]	1562	Cl3Rh1	1246	Cl4Zr1[g]	1719
Cl2Cs2[g]	453	Cl2V1	1621	Cl3Rh1[g]	1247	Cl5Nb1	1022
Cl2Cu1	473	Cl2V1[g]	1622	Cl3Ru1	1252	Cl5Nb1[g]	1022
Cl2Fe1	547	Cl2W1	1646	Cl3Ru1[g]	1252	Cl5P1[g]	1110
Cl2Fe1[g]	548	Cl2W1[g]	1646	Cl3Sb1	1292	Cl5Sb1[g]	1293
Cl2Ga1[g]	590	Cl2Yb1	1678	Cl3Sb1[g]	1292	Cl5Ta1	1452
Cl2Ge1[g]	621	Cl2Zn1	1686	Cl3Sc1	1310	Cl5Ta1[g]	1453
Cl2Hf1[g]	667	Cl2Zn1[g]	1686	Cl3Si1[g]	1345	Cl5U1	1590
Cl2Hg1	677	Cl2Zr1	1716	Cl3Sm1	1388	Cl5U1[g]	1591
Cl2Hg1[g]	678	Cl2Zr1[g]	1717	Cl3Ta1	1450	Cl5W1	1648
Cl2Hg2	678	Cl3.13Nb1	1020	Cl3Ta1[g]	1451	Cl5W1[g]	1648
Cl2In1	705	Cl3Co1[g]	401	Cl3Tb1	1467	Cl6Fe2[g]	551
Cl2In1[g]	706	Cl3Cr1	426	Cl3Tb1[g]	1468	Cl6Ga2[g]	592
Cl2K2[g]	751	Cl3Cu3[g]	474	Cl3Ti1	1531	Cl6In2[g]	708
Cl2Li2[g]	812	Cl3Dy1	509	Cl3Ti1[g]	1532	Cl6U1	1591
Cl2Mg1	857	Cl3Dy1[g]	510	Cl3Tl1	1561	Cl6U1[g]	1592
Cl2Mg1[g]	858	Cl3Dy1H12O6	510	Cl3Tm1	1573	Cl6W1	1649
Cl2Mn1	894	Cl3Er1	518	Cl3Tm1[g]	1574	Cl6W1[g]	1650
Cl2Mn1[g]	895	Cl3Er1[g]	519	Cl3U1	1588	Co1	394
Cl2Mo1O2	928	Cl3Er1H12O6	519	Cl3V1	1622	Co1[g]	395
Cl2Mo1O2[g]	928	Cl3Eu1	527	Cl3Y1	1672	Co1Cr2O4	407
Cl2Na2[g]	974	Cl3Eu1[g]	528	Cl3Yb1	1679	Co1F2	403
Cl2Nb1	1018	Cl3Eu1H12O6	528	Cl3Yb1[g]	1679	Co1F2[g]	404
Cl2Nb1O1	1030	Cl3Fe1	548	Cl3Zr1	1717	Co1F3	404
Cl2Ni1	1061	Cl3Fe1[g]	549	Cl3Zr1[g]	1718	Co1Fe2O4	408
Cl2Ni1[g]	1062	Cl3Ga1	590	Cl4Co2[g]	402	Co1H2O2	408
Cl2Np1O1	1091	Cl3Ga1[g]	591	Cl4Cr1[g]	427	Co1I2	405
Cl2O1[g]	393	Cl3Gd1	610	Cl4Fe2[g]	550	Co1O1	406
Cl2O1S1[g]	1284	Cl3Gd1[g]	611	Cl4Ge1[g]	623	Co1O3Se1	416
Cl2O1Th1	1513	Cl3Ge1[g]	622	Cl4Hf1	668	Co1O3Ti1	410
Cl2O1Ti1[g]	1552	Cl3H12Ho1O6	695	Cl4Hf1[g]	669	Co1O4S1	414
Cl2O1U1	1604	Cl3Hf1[g]	668	Cl4Nb1	1021	Co1O4W1	417
Cl2O2S1[g]	1284	Cl3Ho1	694	Cl4Nb1[g]	1021	Co1P1	411
Cl2O2U1	1605	Cl3Ho1[g]	695	Cl4Np1	1088	Co1P3	412
Cl2O2W1	1666	Cl3In1	706	Cl4O1W1	1665	Co1S0.89	413
Cl2O2W1[g]	1667	Cl3In1[g]	707	Cl4O1W1[g]	1666	Co1S2	413

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Co1Sb0.98	415	Cu1[g]	466	Er1F3[g]	521	F2Mn1	896
Co1Sb2	415	Cu1F1	474	Er1I3[g]	522	F2Mn1[g]	896
Co1Sb3	416	Cu1F1[g]	475	Er2O3	523	F2Na2[g]	978
Co1Sn1	417	Cu1F2	476	Eu1	524	F2Ni1	1064
Co2O4Si1	409	Cu1F2[g]	477	Eu1[g]	525	F2Ni1[g]	1065
Co2O4Ti1	411	Cu1Fe1O2	486	Eu1F3	529	F2O1[g]	1096
Co2P1	412	Cu1Fe1S2	478	Eu1F3[g]	530	F2O1S1[g]	1285
Co3N1	405	Cu1Fe2O4	487	Eu1S1	532	F2O1Si1[g]	1360
Co3O4	407	Cu1H10O9S1	494	Eu1S1[g]	533	F2O1Th1	1514
Co3S4	414	Cu1H2O2	487	Eu2O3	530	F2O1Ti1[g]	1554
Cr1	418	Cu1H2O5S1	493	Eu2O3[M]	531	F2O2S1[g]	1286
Cr1[g]	419	Cu1H6O7S1	493	F10S2[g]	1278	F2O2U1	1606
Cr1F2	427	Cu1I1	480	F1[g]	534	F2Pb1	1139
Cr1F3	428	Cu1I1[g]	481	F1Ga1[g]	593	F2Pb1[g]	1140
Cr1F4	428	Cu1Mg2	482	F1Ge1[g]	624	F2Pd1	1167
Cr1I2	429	Cu1Mo1O4	483	F1H1[g]	646	F2Rb2[g]	1224
Cr1I3	429	Cu1O1	483	F1Hg1[g]	679	F2S1[g]	1272
Cr1K2O4	752	Cu1O1[g]	484	F1In1[g]	709	F2S2[g]	1277
Cr1N1	430	Cu1O3Se1	496	F1K1	753	F2Se1[g]	1328
Cr1Na1O2	440	Cu1O4S1	492	F1K1[g]	754	F2Si1[g]	1348
Cr1Na2O4	975	Cu1P2	488	F1Li1	815	F2Sn1	1399
Cr1O1[g]	432	Cu1S1	489	F1Li1[g]	816	F2Sn1[g]	1399
Cr1O2	433	Cu1S1[g]	490	F1Li1O1[g]	819	F2Sr1	1422
Cr1O2[g]	433	Cu1Se1	495	F1Mg1[g]	859	F2Te1[g]	1485
Cr1O3	434	Cu1Te1	496	F1N1O1[g]	956	F2Th1[g]	1501
Cr1O3[g]	435	Cu2Mg1	482	F1Na1	976	F2Ti1[g]	1535
Cr1S1	441	Cu2O1	485	F1Na1[g]	977	F2Tl2[g]	1564
Cr1S1.17	442	Cu2O4S1	492	F1Ni1[g]	1063	F2Zn1	1687
Cr1Si1	443	Cu2O5S1	488	F1O1Pu1	1209	F2Zn1[g]	1688
Cr1Si2	443	Cu2S1	491	F1O1Sm1	1390	F2Zr1	1721
Cr2Fe1O4	438	Cu2Sb1	494	F1O1Ti1[g]	1553	F2Zr1[g]	1722
Cr2Mg1O4	439	Cu2Se1[B]	495	F1Pb1[g]	1138	F3Fe1	553
Cr2N1	430	Cu2Te1	497	F1Rb1	1222	F3Fe1[g]	554
Cr2Nb1	431	Cu3I3[g]	481	F1Rb1[g]	1223	F3Ga1	595
Cr2Ni1O4	440	Cu3P1	489	F1S1[g]	1271	F3Ga1[g]	596
Cr2O12S3	442	Cu5Fe1S4	479	F1Sb1[g]	1293	F3Gd1	612
Cr2O3	436	D1[g]	498	F1Se1[g]	1327	F3Gd1[g]	613
Cr2Ta1	446	D1F1[g]	501	F1Si1[g]	1347	F3Ge1[g]	626
Cr3Si1	444	D1H1[g]	502	F1Sn1[g]	1398	F3Ho1	696
Cr5Si3	445	D1H1O1[g]	652	F1Te1[g]	1484	F3Ho1[g]	697
Cs1	446	D1N1[g]	937	F1Ti1[g]	1534	F3In1	711
Cs1[g]	447	D1O1[g]	1095	F1Tl1	1562	F3In1[g]	712
Cs1F1	454	D1S1[g]	505	F1Tl1[g]	1563	F3La1	785
Cs1F1[g]	455	D2[g]	499	F1W1[g]	1652	F3La1[g]	786
Cs1H1O1	461	D2N1[g]	938	F1Zr1[g]	1720	F3Li3[g]	818
Cs1H1O1[g]	462	D2O1	503	F2[g]	535	F3Mn1	897
Cs1I1	457	D2O1[g]	504	F2Fe1	552	F3Nd1	1040
Cs1I1[g]	458	D2S1[g]	506	F2Fe1[g]	553	F3Nd1[g]	1041
Cs1O1[g]	459	D3N1[g]	939	F2Ga1[g]	594	F3Np1	1089
Cs1O2	459	Dy1	507	F2Ge1[g]	625	F3P1[g]	1111
Cs2[g]	448	Dy1[g]	508	F2Hg1	679	F3Pr1	1177
Cs2F2[g]	456	Dy1F3	511	F2Hg1[g]	680	F3Pr1[g]	1178
Cs2H2O2[g]	463	Dy1F3[g]	512	F2Hg2	680	F3Pu1	1200
Cs2O1	460	Dy1I3[g]	513	F2In1[g]	710	F3S1[g]	1273
Cs2O1[g]	460	Dy2O3	514	F2K2[g]	755	F3Sb1	1294
Cs2O3	461	Er1	515	F2Li2[g]	817	F3Sb1[g]	1294
Cs2O4S1	464	Er1[g]	516	F2Mg1	860	F3Sc1	1311
Cu1	465	Er1F3	520	F2Mg1[g]	861	F3Sc1[g]	1312

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F3Si1[g]	1349	Fe0.947O1	560	Ga2S3	602	H2K1O4P1	757
F3Th1[g]	1502	Fe1	536	Ga2Se3	604	H2K2O2[g]	771
F3Ti1	1535	Fe1[g]	537	Ga2Te3	605	H2La1	786
F3Ti1[g]	1536	Fe1H2O2	566	Gd1	606	H2Li2O2[g]	836
F3Tm1	1575	Fe1H3O3	566	Gd1[g]	607	H2Mg1	862
F3Tm1[g]	1576	Fe1I2	555	Gd1I3	614	H2Mg1O2	871
F3U1	1592	Fe1I2[g]	556	Gd1I3[g]	615	H2Mg3O12Si4	874
F3V1	1624	Fe1Li1O2	833	Gd2O3	616	H2Mg7O24Si8	875
F3Y1	1673	Fe1Mo1O4	558	Gd2O3[M]	617	H2N1[g]	941
F3Zr1	1722	Fe1Na1O2	569	Ge1	618	H2Na2O2[g]	992
F3Zr1[g]	1723	Fe1O1	561	Ge1[g]	619	H2Nd1	1041
F4.25U1	1594	Fe1O1[g]	562	Ge1H4[g]	628	H2Np1O4	1091
F4.5U1	1594	Fe1O3Si1	570	Ge1I4[g]	628	H2O1	649
F4Ge1[g]	627	Fe1O3Ti1	572	Ge1Mg2	629	H2O1[g]	650
F4Hf1	669	Fe1O4S1	578	Ge1Ni2	629	H2O2	651
F4Hf1[g]	670	Fe1O4V2	574	Ge1O1[g]	630	H2O2[g]	651
F4Mg2[g]	862	Fe1O4W1	585	Ge1O2	631	H2O2Sr1	1430
F4O1W1	1667	Fe1O6V2	584	Ge1P1	632	H2O2Sr1[g]	1431
F4O1W1[g]	1668	Fe1S1	576	Ge1S1	632	H2O4S1	656
F4Pb1[g]	1141	Fe1S1[g]	577	Ge1S1[g]	633	H2O4S1[g]	656
F4Pu1	1201	Fe1S2	578	Ge1S2	634	H2O4U1	1606
F4S1[g]	1274	Fe1Se0.96	579	Ge1Se1	634	H2O4W1	658
F4Se1[g]	1329	Fe1Si1	580	Ge1Se1[g]	635	H2O4W1[g]	659
F4Si1[g]	1350	Fe1Si2	580	Ge1Se2	635	H2O5S1Zn1	1699
F4Te1[g]	1486	Fe1Si2.33	581	Ge1Te1	636	H2Pr1	1178
F4Th1	1503	Fe1Te0.9	582	Ge1U1	636	H2Pu1	1202
F4Th1[g]	1504	Fe1Te2	582	Ge2U1	637	H2S1[g]	655
F4Ti1	1536	Fe1Ti1	583	Ge3U1	637	H2S2[g]	655
F4Ti1[g]	1537	Fe2H2O4	567	Ge3U5	638	H2Se1[g]	657
F4U1	1593	Fe2I4[g]	557	Ge5U3	638	H2Sr1	1423
F4U1[g]	1593	Fe2Mg1O4	567	H12O10S1Zn1	1700	H2Te1[g]	658
F4V1	1624	Fe2Mn1O4	568	H14O11S1Zn1	1701	H2Th1	1504
F4Zr1	1724	Fe2Nb1	1024	H1[g]	639	H2Ti1	1538
F4Zr1[g]	1725	Fe2Ni1O4	570	H1Hg1[g]	681	H3N1[g]	942
F5Nb1	1023	Fe2O12S3	579	H1I1[g]	647	H3O4P1	653
F5Nb1[g]	1023	Fe2O3	563	H1K1	755	H3P1[g]	1113
F5P1[g]	1112	Fe2O4Si1	571	H1K1[g]	756	H3Pu1	1203
F5Ru1	1253	Fe2O4Ti1	573	H1K1O1	769	H3Sb1[g]	1295
F5S1[g]	1275	Fe2O4Zn1	574	H1K1O1[g]	770	H3U1[B]	1597
F5Se1[g]	1330	Fe2Ta1	581	H1K2O4P1	757	H4I1N1	944
F5Ta1	1453	Fe2U1	584	H1Li1	820	H4Mg3O9Si2	874
F5Ta1[g]	1454	Fe3Mo2	558	H1Li1[g]	821	H4N2[g]	943
F5Te1[g]	1487	Fe3O4	564	H1Li1O1	834	H4O5U1	1607
F5U1	1595	Fe4N1	559	H1Li1O1[g]	835	H4O6S1Zn1	1700
F5U1[g]	1595	Ga1	586	H1Mg1O1[g]	870	H4Si1[g]	1352
F5V1[g]	1625	Ga1[g]	587	H1N1[g]	940	H4Sn1[g]	1400
F6Ir1[g]	730	Ga1I3	596	H1N1O3[g]	649	H6Si2[g]	1352
F6Np1	1089	Ga1N1	597	H1Na1	978	H8N2O4S1	945
F6Np1[g]	1090	Ga1O1[g]	598	H1Na1[g]	979	He1[g]	660
F6Pu1	1201	Ga1P1	601	H1Na1O1	990	Hf1	661
F6Pu1[g]	1202	Ga1S1	601	H1Na1O1[g]	991	Hf1[g]	663
F6S1[g]	1276	Ga1Sb1	603	H1O1[g]	1097	Hf1I4	670
F6Se1[g]	1331	Ga1Se1	603	H1O1Sr1[g]	1429	Hf1I4[g]	671
F6Te1[g]	1488	Ga1Te1	605	H1Pb1[g]	1142	Hf1N1	671
F6U1	1596	Ga2O12Se3	604	H1S1[g]	654	Hf1O2	672
F6U1[g]	1596	Ga2O1[g]	599	H1Si1[g]	1351	Hf1O3Sr1	673
F6W1[g]	1653	Ga2O3	600	H1Zr1[g]	1726	Hg1	673
Fe0.877S1	575	Ga2S1[g]	602	H2[g]	640	Hg1[g]	674

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Hg1I1[g]	682	I2Ti1	1539	In2O12S3	722	Li3N1	824
Hg1I2	682	I2Ti1[g]	1540	In2O1[g]	716	Li4O4Si1	839
Hg1I2[g]	683	I2V1	1625	In2O3	717	Lu1	844
Hg1O1	684	I2V1[g]	1626	In2S3	721	Lu1[g]	845
Hg1O1[g]	684	I2Zn1	1688	In2Se3	724	Lu2O3	846
Hg1O3Se1	688	I2Zn1[g]	1689	In2Te1	725	Mg1	847
Hg1O4S1	686	I2Zr1	1728	In2Te3	726	Mg1[g]	848
Hg1S1	685	I2Zr1[g]	1729	In5S6	721	Mg1Mo1O4	865
Hg1S1[g]	685	I3In1	714	Ir1	727	Mg1N2O6	866
Hg1Se1	687	I3In1[g]	715	Ir1[g]	728	Mg1Ni2	867
Hg1Se1[g]	687	I3La1	787	Ir1O2	731	Mg1O1	868
Hg1Te1	688	I3La1[g]	788	Ir1O2[g]	732	Mg1O3Se1	883
Hg1Te1[g]	689	I3Nd1	1042	Ir1O3[g]	733	Mg1O3Si1	872
Hg2I2	683	I3Nd1[g]	1043	Ir1S2	733	Mg1O3Ti1	876
Hg2O4S1	686	I3P1[g]	1113	Ir2S3	734	Mg1O4S1	882
Ho1	690	I3Pr1	1179	K1	734	Mg1O4W1	886
Ho1[g]	691	I3Pr1[g]	1180	K1[g]	735	Mg1O5Ti2	877
Ho2O3	697	I3Pu1	1203	K1N1O3	760	Mg1O6V2	885
I1[g]	698	I3Sb1	1295	K1O1[g]	761	Mg1S1	880
I1In1	712	I3Sb1[g]	1296	K1O2	761	Mg1S1[g]	881
I1In1[g]	713	I3Si1[g]	1355	K2[g]	736	Mg1Se1	882
I1Ir1	730	I3Ti1	1540	K2O1	762	Mg1Te1	884
I1K1	758	I3Ti1[g]	1541	K2O2	762	Mg2O4Si1	873
I1K1[g]	759	I3Tm1[g]	1577	K2O3S1	776	Mg2O4Ti1	878
I1Li1	822	I3U1	1597	K2O3Si1	772	Mg2O7V2	885
I1Li1[g]	823	I3V1	1626	K2O4S1	777	Mg2Pb1	879
I1Mg1[g]	863	I3Y1	1674	K2O5Si2	773	Mg2Si1	883
I1Na1	980	I3Zr1	1729	K2O9Si4	774	Mg2Th1	884
I1Ni1[g]	1066	I3Zr1[g]	1730	K2S1	775	Mg3N2	866
I1O1Pu1	1210	I4Pb1[g]	1146	K3O4P1	774	Mg3O8P2	879
I1Pb1[g]	1143	I4Pb2[g]	1146	Kr1[g]	778	Mn1	887
I1Rb1	1225	I4Pt1	1189	La1	779	Mn1[g]	888
I1Rb1[g]	1226	I4Si1	1355	La1[g]	780	Mn1Mo1O4	898
I1Si1[g]	1353	I4Si1[g]	1356	La1Mg1	788	Mn1O1	900
I1Ti1[g]	1539	I4Sn1	1401	La1N1	789	Mn1O2	901
I1Tl1	1565	I4Sn1[g]	1402	La1S1	791	Mn1O3Si1	904
I1Tl1[g]	1566	I4Sn2[g]	1402	La1Se1	793	Mn1O3Ti1	906
I1Zr1[g]	1727	I4Th1	1505	La1Se1[g]	794	Mn1O4S1	910
I2	699	I4Th1[g]	1506	La2O3	790	Mn1O4W1	916
I2[g]	699	I4Ti1	1541	La2S3	792	Mn1P1	907
I2In1[g]	714	I4Ti1[g]	1542	La2Se3	795	Mn1P3	907
I2Ir1	731	I4U1	1598	La2Te3	796	Mn1S1	909
I2K2[g]	760	I4U1[g]	1598	Li1	797	Mn1S2	909
I2Li2[g]	824	I4Zr1	1730	Li1[g]	798	Mn1Sb1	910
I2Mg1	864	I4Zr1[g]	1731	Li1O1[g]	825	Mn1Se1	911
I2Mg1[g]	865	I5Nb1	1024	Li2[g]	799	Mn1Si1	912
I2Mn1	897	I5Ta1	1454	Li2O1	826	Mn1Si1.7	913
I2Ni1	1066	I5Ta1[g]	1455	Li2O1[g]	827	Mn1Sn2	914
I2O1Th1	1514	In1	700	Li2O2	827	Mn1Te1	915
I2O2W1[g]	1668	In1[g]	701	Li2O2[g]	828	Mn1Te2	915
I2Pb1	1144	In1N1	715	Li2O3Si1	837	Mn2O3	901
I2Pb1[g]	1145	In1P1	718	Li2O3Ti1	840	Mn2O4Si1	905
I2Pd1	1168	In1S1	719	Li2O3Zr1	841	Mn2O4Ti1	906
I2Si1[g]	1354	In1S1[g]	720	Li2O4S1	842	Mn2P1	908
I2Sn1	1400	In1Sb1	722	Li2O5Si2	838	Mn2Sb1	911
I2Sn1[g]	1401	In1Se1	723	Li2S1	841	Mn3O4	902
I2Sr1	1424	In1Se1[g]	724	Li2Se1	842	Mn3Si1	913
I2Sr1[g]	1425	In1Te1	725	Li2Te1	843	Mn4N1	898

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Mn5N2	899	Na1Te3	1005	Ni1Si1	1080	O2Os1	1101
Mn5Si3	914	Na2[g]	958	Ni1Te1.1	1082	O2P1[g]	1116
Mo1	917	Na2O1	984	Ni1Ti1	1083	O2Pb1	1150
Mo1[g]	919	Na2O2	985	Ni1Ti2	1083	O2Pr1	1181
Mo1Na2O4	981	Na2O3S1	1002	Ni2O4Si1	1070	O2Pt1[g]	1189
Mo1O1[g]	923	Na2O3Si1	993	Ni2P1	1071	O2Pu1	1206
Mo1O2	924	Na2O3Ti1	996	Ni3P1	1072	O2Rb1	1227
Mo1O2[g]	925	Na2O4S1	1003	Ni3S2	1076	O2Re1	1238
Mo1O3	926	Na2O4S1[III]	1004	Ni3S4	1076	O2Rh1[g]	1247
Mo1O3[g]	927	Na2O4W1	1009	Ni3Sn1	1081	O2Ru1	1254
Mo1O4Pb1	1147	Na2O5Si2	994	Ni3Sn2	1082	O2S1[g]	1281
Mo1O4Sr1	1426	Na2O5Ti2	997	Ni3Ti1	1084	O2Se1	1332
Mo1S2	929	Na2O7Ti3	998	Ni5P2	1072	O2Se1[g]	1333
Mo1S3	929	Na2S1	999	Ni7Si13	1081	O2Si1	1359
Mo1Si2	931	Na2S2	1000	Np1	1085	O2Si1[CR]	1360
Mo2N1	922	Na2S3	1000	Np1[g]	1087	O2Sn1	1404
Mo2S3	930	Na2S4	1001	Np1O2	1090	O2Sr1	1428
Mo3Si1	932	Na2Te1	1006	O1.72Tb1	1468	O2Ta1[g]	1459
Mo5Si3	933	Na3O4P1	998	O1.81Tb1	1469	O2Tb1	1469
N0.465V1	1627	Na3O4V1	1008	O1.83Pr1	1180	O2Tc1	1477
N1[g]	934	Na4O4Si1	995	O10P4	1118	O2Te1	1490
N1Na1O2	982	Na4O7V2	1008	O10P4[g]	1119	O2Te1[g]	1491
N1Na1O3	982	Na6O7Si2	995	O10Sr4Ti3	1435	O2Te2[g]	1492
N1Nb1	1025	Nb1	1010	O12Pr7	1182	O2Th1	1511
N1Nb2	1026	Nb1[g]	1012	O12S3Sb2	1304	O2Th1[g]	1512
N1O1[g]	946	Nb1O1	1027	O12W4[g]	1665	O2Ti1	1546
N1O2[g]	947	Nb1O2	1028	O1[g]	1092	O2Ti1[A]	1547
N1O3[g]	948	Nb1Si2	1032	O1P1[g]	1115	O2U1	1600
N1P1[g]	1114	Nb2O5	1029	O1Pb1	1148	O2V1[g]	1631
N1Pu1	1204	Nb5Si3	1033	O1Pb1[g]	1149	O2W1	1655
N1S1[g]	1279	Nd1	1034	O1Pb1[R]	1149	O2W1[g]	1656
N1Sc1	1313	Nd1[g]	1035	O1Pd1	1168	O2Zr1	1734
N1Ta1	1456	Nd1S1	1045	O1Pu1	1205	O2Zr1[g]	1735
N1Ta2	1457	Nd1Se1	1047	O1Rb2	1228	O3[g]	1094
N1Th1	1507	Nd1Te1	1049	O1S1[g]	1280	O3Pb1Se1	1162
N1Ti1	1543	Nd2O12S3	1046	O1S2[g]	1283	O3Pb1Si1	1154
N1U1	1599	Nd2O3	1044	O1Sb1[g]	1296	O3Pb1Ti1	1157
N1V1	1628	Nd2O7Zr2	1045	O1Se1[g]	1332	O3Pr2	1181
N1Y1	1674	Nd2S3	1046	O1Si1[g]	1358	O3Pu2	1207
N1Zr1	1732	Nd2Se3	1048	O1Sn1	1403	O3Pu2[B]	1208
N2[g]	935	Nd2Te3	1050	O1Sn1[g]	1403	O3Rb2Si1	1229
N2O1[g]	949	Ne1[g]	1051	O1Sr1	1427	O3Re1	1239
N2O1Th2	1509	Ni1	1052	O1Ta1[g]	1458	O3Rh2	1248
N2O3[g]	950	Ni1[g]	1053	O1Te1[g]	1489	O3Ru1[g]	1254
N2O4	950	Ni1O1	1067	O1Th1[g]	1510	O3S1[g]	1282
N2O4[g]	951	Ni1O1[g]	1068	O1Ti1	1544	O3Sb2	1297
N2O5[g]	952	Ni1O3Se1	1080	O1Ti1[g]	1545	O3Sb2[O]	1298
N2O8U1	1607	Ni1O3Ti1	1071	O1Tl2	1566	O3Sc2	1314
N2Sr3	1426	Ni1O4S1	1077	O1Tl2[g]	1567	O3Se1Zn1	1702
N2Zn3	1689	Ni1O4W1	1084	O1V1	1629	O3Si1Sr1	1432
N4Si3	1357	Ni1S0.84	1073	O1V1[g]	1630	O3Si1Zn1	1691
N4Th3	1508	Ni1S1	1074	O1W1[g]	1654	O3Sm2	1388
Na1	956	Ni1S2	1075	O1Zn1	1690	O3Sm2[M]	1389
Na1[g]	957	Ni1Sb1	1077	O1Zr1[g]	1733	O3Sr1Ti1	1433
Na1O1[g]	983	Ni1Se1.05	1078	O2.72W1	1657	O3Sr1Zr1	1436
Na1O2	983	Ni1Se1.14	1078	O2.96W1	1659	O3Tb2	1470
Na1O3V1	1007	Ni1Se1.25	1079	O2.9W1	1658	O3Tc1	1477
Na1Te1	1004	Ni1Se2	1079	O2[g]	1093	O3Ti2	1548

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O3Tl2	1567	O9Rb2Si4	1231	Re1	1233	S4Sn3	1407
O3Tm2	1578	O9S2Zn3	1691	Re1[g]	1235	S5[g]	1262
O3U1	1601	O9U4	1602	Re1S2	1240	S6[g]	1263
O3V2	1632	O9W3[g]	1664	Re1Si1	1241	S7[g]	1264
O3W1	1660	Os1	1098	Re1Si2	1241	S8[g]	1265
O3W1[g]	1661	Os1[g]	1100	Re2S7	1240	Sb1	1287
O3Y2	1675	Os1P2	1103	Re2Te5	1242	Sb1[g]	1288
O3Yb2	1680	Os1S2	1103	Re2Th1	1517	Sb1Se1[g]	1305
O4Os1	1102	Os1Se2	1104	Re2Y1	1243	Sb1Zn1	1306
O4Os1[g]	1102	P1	1104	Re5Si3	1242	Sb2[g]	1289
O4Pb1S1	1160	P1[g]	1105	Rh1	1244	Sb2Se3	1305
O4Pb1Se1	1163	P1S1[g]	1122	Rh1[g]	1245	Sb2Te3	1306
O4Pb1W1	1164	P1Si1	1361	Rh3U1	1248	Sb4[g]	1290
O4Pb2Si1	1155	P1Th1	1515	Rn1[g]	1249	Sc1	1307
O4Pb3	1150	P1[R]	1105	Ru1	1250	Sc1[g]	1308
O4Rb2S1	1232	P2[g]	1106	Ru1[g]	1251	Se1	1315
O4Ru1[g]	1255	P2Zn1	1694	Ru1S2	1255	Se1[g]	1315
O4S1Sn1	1408	P2Zn3	1695	Ru1Se2	1256	Se1Si1[g]	1363
O4S1Sr1	1439	P4[g]	1107	Ru3U1	1256	Se1Sn1	1409
O4S1Tl2	1569	P4S10	1124	S1	1257	Se1Sn1[g]	1409
O4S1Zn1	1699	P4S3	1122	S1[g]	1258	Se1Tb1[g]	1472
O4Sb2	1298	P4S5	1123	S1Si1[g]	1361	Se1Tl1	1570
O4Si1Sr2	1432	P4S6	1123	S1Sn1	1405	Se1Tl2	1570
O4Si1Zn2	1692	P4S7	1124	S1Sn1[g]	1406	Se1U1	1612
O4Si1Zr1	1736	P4Th3	1516	S1Sr1	1437	Se1Zn1	1701
O4Sr1W1	1440	Pa1	1125	S1Sr1[g]	1438	Se1Zn1[g]	1702
O4Sr2Ti1	1434	Pa1[g]	1126	S1Ta1[g]	1462	Se2[g]	1316
O4Ti1Zn2	1693	Pb1	1127	S1Tb1[g]	1471	Se2Sn1	1410
O4V2	1633	Pb1[g]	1128	S1Th1	1517	Se3[g]	1317
O4W1Zn1	1704	Pb1S1	1158	S1Ti1	1555	Se4[g]	1318
O5P2	1117	Pb1S1[g]	1159	S1Ti1[g]	1556	Se5[g]	1319
O5Pb2S1	1152	Pb1Se1	1161	S1Tl2	1568	Se6[g]	1320
O5Rb2Si2	1230	Pb1Se1[g]	1162	S1U1	1608	Se7[g]	1321
O5Sb2	1299	Pb1Te1	1163	S1U1[g]	1609	Se8[g]	1322
O5Ta2	1460	Pb1Te1[g]	1164	S1Zn1	1697	Si1	1334
O5Ti3	1549	Pb2[g]	1129	S1Zn1[g]	1698	Si1[g]	1335
O5V2	1634	Pd1	1165	S1Zn1[S]	1698	Si1Ta2	1364
O6P4[g]	1118	Pd1[g]	1166	S1Zr1[g]	1737	Si1Th1	1367
O6Pb3S1	1153	Pd1S1	1169	S2[g]	1259	Si1Ti1	1371
O6Pb4Si1	1156	Pd1S2	1169	S2Sb3[g]	1303	Si1U1	1374
O6S1U1	1608	Pd1Te1	1170	S2Si1	1362	Si1U3	1374
O6Sb4[g]	1299	Pd4S1	1170	S2Sn1	1406	Si1V3	1378
O6W2[g]	1662	Pr1	1171	S2Ta1	1463	Si1Zr1	1383
O7Pb4S1	1153	Pr1[g]	1172	S2Th1	1518	Si1Zr2	1383
O7Re2	1239	Pr1S1	1182	S2Ti1	1557	Si2[g]	1336
O7Sm2Zr2	1391	Pr3S4	1183	S2U1	1610	Si2Ta1	1365
O7Tc2	1478	Pt1	1184	S2W1	1669	Si2Th1	1368
O7Tc2[g]	1478	Pt1[g]	1185	S2Zr1	1738	Si2Th3	1369
O7Ti4	1550	Pt1S1	1190	S3[g]	1260	Si2Ti1	1372
O7Y2Zr2	1676	Pt1S2	1190	S3Sb1[g]	1300	Si2U1	1375
O8P2Zn3	1696	Pt5Se4	1191	S3Sb2	1301	Si2U3	1376
O8Pb5S1	1154	Pu1	1192	S3Sb2[g]	1301	Si2V1	1379
O8Pu1S2	1212	Pu1[g]	1194	S3Sb4[g]	1304	Si2W1	1381
O8S2Sn1	1408	Pu1S1	1211	S3Sn2	1407	Si2Zr1	1384
O8S2Th1	1519	Pu2S3	1212	S3Th2	1519	Si3[g]	1337
O8S2U1	1611	Rb1	1213	S3U2	1611	Si3Ta5	1366
O8U3	1601	Rb1[g]	1214	S4[g]	1261	Si3Ti5	1373
O8W3[g]	1663	Rb2[g]	1215	S4Sb2[g]	1302	Si3U1	1377

Formula	Page	Formula	Page	Formula	Page	Formula	Page
Si3V5	1380	Ta1	1441	Th1	1493	W1	1636
Si3W5	1382	Ta1[g]	1443	Th1[g]	1495	W1[g]	1638
Si3Zr5	1384	Tb1	1464	Ti1	1520	Xe1[g]	1669
Si5Th3	1370	Tb1[g]	1465	Ti1[g]	1521	Y1	1670
Si5U3	1378	Tb1Te1[g]	1473	Tl1	1558	Y1[g]	1671
Sm1	1385	Tc1	1474	Tl1[g]	1559	Yb1	1677
Sm1[g]	1386	Tc1[g]	1476	Tm1	1571	Yb1[g]	1678
Sn1	1392	Te1	1479	Tm1[g]	1572	Zn1	1681
Sn1[g]	1393	Te1[g]	1480	U1	1579	Zn1[g]	1682
Sn1Te1	1410	Te1Tl2	1571	U1[g]	1581	Zr1	1705
Sn1Te1[g]	1411	Te1Zn1	1703	V1	1613	Zr1[g]	1707
Sr1	1412	Te1Zn1[g]	1703	V1[g]	1614	e-1[g]	1739
Sr1[g]	1413	Te2[g]	1481				

Part VII
The Tables

14 Tables of thermochemical data of pure substances

107.868

SILVER

Ag

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	25.407	42.677	42.677	0.000	0.000	−12.724	0.000	0.000	0.000
	300.00	25.410	42.834	42.677	0.047	0.047	−12.803	0.000	0.000	0.000
	400.00	25.784	50.189	43.678	2.604	2.604	−17.471	0.000	0.000	0.000
	500.00	26.332	55.999	45.580	5.209	5.209	−22.790	0.000	0.000	0.000
	600.00	26.948	60.854	47.732	7.873	7.873	−28.639	0.000	0.000	0.000
	700.00	27.597	65.056	49.913	10.600	10.600	−34.939	0.000	0.000	0.000
	800.00	28.263	68.785	52.044	13.393	13.393	−41.635	0.000	0.000	0.000
	900.00	29.020	72.157	54.094	16.256	16.256	−48.684	0.000	0.000	0.000
	1000.00	29.857	75.258	56.057	19.200	19.200	−56.057	0.000	0.000	0.000
	1100.00	30.636	78.140	57.935	22.225	22.225	−63.729	0.000	0.000	0.000
	1200.00	31.572	80.843	59.733	25.332	25.332	−71.679	0.000	0.000	0.000
	1233.95	32.030	81.730	60.326	26.412	26.412	−74.439	0.000	0.000	0.000
			9.155		11.297					
LIQ	1233.95	33.472	90.885	60.326	37.709	37.709	−74.439	0.000	0.000	0.000
	1300.00	33.472	92.630	61.923	39.920	39.920	−80.500	0.000	0.000	0.000
	1400.00	33.472	95.111	64.206	43.267	43.267	−89.889	0.000	0.000	0.000
	1500.00	33.472	97.420	66.344	46.614	46.614	−99.516	0.000	0.000	0.000
	1600.00	33.472	99.580	68.355	49.961	49.961	−109.368	0.000	0.000	0.000
	1700.00	33.472	101.610	70.252	53.308	53.308	−119.428	0.000	0.000	0.000
	1800.00	33.472	103.523	72.048	56.656	56.656	−129.686	0.000	0.000	0.000
	1900.00	33.472	105.333	73.752	60.003	60.003	−140.129	0.000	0.000	0.000
	2000.00	33.472	107.050	75.375	63.350	63.350	−150.749	0.000	0.000	0.000
	2100.00	33.472	108.683	76.922	66.697	66.697	−161.536	0.000	0.000	0.000
	2200.00	33.472	110.240	78.401	70.044	70.044	−172.483	0.000	0.000	0.000
	2300.00	33.472	111.728	79.818	73.392	73.392	−183.582	0.000	0.000	0.000
	2400.00	33.472	113.152	81.178	76.739	76.739	−194.827	0.000	0.000	0.000
	2433.00	33.472	113.609	81.615	77.843	77.843	−198.568	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks	
SOL	Hu1	Hu1	Hu1	MPT= 1233.95 (IPTS REF. POINT)
LIQ	Hu1	Hu1	Hu1	BPT= 2433., L= 250.62 kJ

Ag[g] SILVER (GAS) 107.868

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	20.786	172.992	172.992	284.094	0.000	232.516	284.094	245.240	–42.965
	300.00	20.786	173.121	172.993	284.132	0.038	232.196	284.085	244.999	–42.658
	400.00	20.786	179.101	173.808	286.211	2.117	214.571	283.607	232.042	–30.302
	500.00	20.786	183.739	175.348	288.290	4.196	196.420	283.080	219.210	–22.901
	600.00	20.786	187.529	177.072	290.368	6.274	177.851	282.495	206.490	–17.977
	700.00	20.786	190.733	178.800	292.447	8.353	158.934	281.847	193.873	–14.467
	800.00	20.786	193.509	180.469	294.526	10.432	139.719	281.133	181.354	–11.841
	900.00	20.786	195.957	182.057	296.604	12.510	120.243	280.348	168.928	–9.804
	1000.00	20.786	198.147	183.558	298.683	14.589	100.536	279.482	156.593	–8.180
	1100.00	20.786	200.128	184.976	300.761	16.667	80.621	278.536	144.349	–6.855
	1200.00	20.786	201.937	186.315	302.840	18.746	60.516	277.508	132.195	–5.754
	1300.00	20.786	203.600	187.581	304.919	20.825	40.238	264.999	120.738	–4.851
	1400.00	20.786	205.141	188.781	306.997	22.903	19.800	263.730	109.689	–4.093
	1500.00	20.786	206.575	189.920	309.076	24.982	–0.786	262.462	98.730	–3.438
	1600.00	20.786	207.916	191.004	311.154	27.060	–21.512	261.193	87.856	–2.868
	1700.00	20.786	209.176	192.036	313.233	29.139	–42.367	259.925	77.061	–2.368
	1800.00	20.786	210.365	193.021	315.312	31.218	–63.345	258.656	66.341	–1.925
	1900.00	20.786	211.488	193.964	317.390	33.296	–84.438	257.388	55.692	–1.531
	2000.00	20.786	212.555	194.867	319.469	35.375	–105.640	256.119	45.109	–1.178
	2100.00	20.786	213.569	195.734	321.547	37.453	–126.947	254.850	34.589	–0.860
	2200.00	20.786	214.536	196.567	323.626	39.532	–148.353	253.582	24.131	–0.573
	2300.00	20.786	215.460	197.368	325.705	41.611	–169.853	252.313	13.729	–0.312
	2400.00	20.786	216.344	198.141	327.783	43.689	–191.443	251.045	3.383	–0.074
	2500.00	20.786	217.193	198.886	329.862	45.768	–213.120	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1

462.524

SILVER ARSENATE

Ag3AsO4

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol		]	[−]
SOL	298.15	173.862	275.830	275.830	−634.294	0.000	−716.533	−634.294	−545.386	95.549
	300.00	174.023	276.906	275.834	−633.972	0.322	−717.044	−634.268	−544.834	94.864
	400.00	181.637	328.055	282.756	−616.174	18.120	−747.396	−632.591	−515.264	67.287
	500.00	188.125	369.296	296.069	−597.681	36.613	−782.329	−630.597	−486.158	50.789
	600.00	194.171	404.134	311.250	−578.564	55.730	−821.044	−628.412	−457.473	39.827
	700.00	200.007	434.505	326.733	−558.853	75.441	−863.007	−626.070	−429.166	32.025
	800.00	205.732	461.587	341.927	−538.566	95.728	−907.836	−623.567	−401.205	26.196
	900.00	211.392	486.146	356.607	−517.709	116.585	−955.241	−620.894	−373.569	21.681
	1000.00	217.012	508.710	370.704	−496.289	138.005	−1004.998	−618.039	−346.239	18.086
	1100.00	222.605	529.655	384.213	−474.308	159.986	−1056.929	−614.989	−319.206	15.158
	1108.00	223.052	531.270	385.269	−472.525	161.769	−1061.173	−614.737	−317.055	14.947

References

Phase	H / S	C_p
SOL	G1	G1

187.772

SILVER BROMIDE

AgBr

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol		]	[−]
SOL	298.15	54.599	107.110	107.110	−100.575	0.000	−132.510	−100.575	−97.095	17.011
	300.00	54.640	107.448	107.111	−100.474	0.101	−132.708	−100.591	−97.074	16.902
	400.00	57.444	123.448	109.275	−94.906	5.669	−144.285	−114.821	−92.906	12.132
	500.00	61.670	136.730	113.472	−88.946	11.629	−157.311	−113.313	−87.594	9.151
	600.00	73.971	148.751	118.351	−82.335	18.240	−171.586	−111.224	−82.629	7.193
	700.00	127.192	163.339	123.667	−72.805	27.770	−187.142	−106.289	−78.182	5.834
			12.134		8.494					
LIQ	700.00	60.501	175.473	123.667	−64.311	36.264	−187.142	−97.795	−78.182	5.834
	800.00	59.999	183.519	130.658	−58.286	42.289	−205.101	−96.437	−75.474	4.928
	900.00	59.496	190.557	136.930	−52.311	48.264	−223.812	−95.204	−72.929	4.233
	1000.00	58.994	196.800	142.611	−46.387	54.188	−243.186	−94.106	−70.514	3.683
	1100.00	58.492	202.399	147.796	−40.512	60.063	−263.151	−93.143	−68.203	3.239
	1200.00	57.990	207.467	152.561	−34.688	65.887	−283.648	−92.316	−65.973	2.872
	1300.00	57.488	212.089	156.965	−28.914	71.661	−304.629	−103.022	−63.199	2.539
	1400.00	56.986	216.331	161.056	−23.190	77.385	−326.053	−102.541	−60.154	2.244
	1500.00	56.484	220.245	164.873	−17.517	83.058	−347.885	−102.113	−57.142	1.990
	1600.00	55.982	223.874	168.449	−11.894	88.681	−370.093	−101.739	−54.156	1.768
	1633.91	55.812	225.047	169.611	−9.998	90.577	−377.704	−101.623	−53.149	1.699

References

Phase	H / S	C_p	Remarks
SOL	Pa2	Pa2	
LIQ	Pa2	Pa2	e/Tk1 BPT= 1634., L = 157.15 / NBPT= 1778.

AgBr[g] SILVER BROMIDE (GAS) 187.772

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol		]	[−]
GAS	298.15	36.623	256.981	256.981	96.490	0.000	19.871	96.490	55.286	−9.686
	300.00	36.642	257.208	256.982	96.558	0.068	19.395	96.441	55.030	−9.582
	400.00	37.334	267.858	258.429	100.262	3.772	−6.882	80.346	44.498	−5.811
	500.00	37.654	276.227	261.182	104.013	7.523	−34.101	79.646	35.616	−3.721
	600.00	37.828	283.109	264.280	107.788	11.298	−62.078	78.898	26.879	−2.340
	700.00	37.933	288.949	267.398	111.576	15.086	−90.688	78.092	18.272	−1.363
	800.00	38.001	294.019	270.415	115.373	18.883	−119.842	77.222	9.785	−0.639
	900.00	38.047	298.497	273.292	119.175	22.685	−149.472	76.282	1.411	−0.082
	1000.00	38.081	302.508	276.016	122.982	26.492	−179.526	75.262	−6.854	0.358
	1100.00	38.105	306.139	278.592	126.791	30.301	−209.961	74.160	−15.013	0.713
	1200.00	38.124	309.455	281.028	130.603	34.113	−240.743	72.975	−23.068	1.004
	1300.00	38.139	312.507	283.334	134.416	37.926	−271.844	60.308	−30.413	1.222
	1400.00	38.150	315.334	285.520	138.230	41.740	−303.237	58.880	−37.338	1.393
	1500.00	38.160	317.966	287.596	142.046	45.556	−334.904	57.449	−44.161	1.538
	1600.00	38.167	320.430	289.572	145.862	49.372	−366.825	56.017	−50.889	1.661
	1700.00	38.174	322.744	291.456	149.679	53.189	−398.985	54.583	−57.526	1.768
	1800.00	38.179	324.926	293.255	153.497	57.007	−431.369	53.147	−64.080	1.860
	1900.00	38.183	326.990	294.977	157.315	60.825	−463.966	51.709	−70.553	1.940
	2000.00	38.187	328.949	296.627	161.134	64.644	−496.764	50.269	−76.951	2.010

References

Phase	H / S	C_p
GAS	Tk1	Tk1,e

AgBrO3 SILVER BROMATE 235.770

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol		]	[−]
SOL	298.15	104.368	151.879	151.879	−10.460	0.000	−55.743	−10.460	71.419	−12.512
	300.00	104.600	152.526	151.881	−10.267	0.193	−56.024	−10.465	71.927	−12.524
	400.00	117.152	184.336	156.134	0.821	11.281	−72.914	−23.633	102.250	−13.353

References

Phase	H / S	C_p
SOL	Nb1	e

133.886

SILVER CYANIDE **AgCN**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL	298.15	66.487	107.190	107.190	145.996	0.000	114.037	145.996	157.037	−27.512
	300.00	66.526	107.601	107.191	146.119	0.123	113.839	146.029	157.105	−27.354
	400.00	68.618	127.026	109.826	152.876	6.880	102.066	147.733	160.536	−20.964
	500.00	70.710	142.562	114.869	159.843	13.847	88.561	149.294	163.554	−17.086

References

Phase	H / S	C_p
SOL	Nb1	Nb1,e

275.746

SILVER CARBONATE **Ag2CO3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL	298.15	111.617	167.402	167.402	−505.800	0.000	−555.711	−505.800	−436.804	76.526
	300.00	111.817	168.093	167.404	−505.593	0.207	−556.021	−505.785	−436.376	75.980
	400.00	122.633	201.742	171.919	−493.871	11.929	−574.568	−504.671	−413.392	53.983
	500.00	133.449	230.269	180.802	−481.067	24.733	−596.201	−502.996	−390.755	40.822

References

Phase	H / S	C_p
SOL	Nb1	Ku1

AgCl SILVER CHLORIDE 143.321

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	52.886	96.199	96.199	−127.068	0.000	−155.750	−127.068	−109.764	19.230
	300.00	52.970	96.526	96.200	−126.970	0.098	−155.928	−127.048	−109.657	19.093
	400.00	55.438	112.148	98.313	−121.534	5.534	−166.393	−125.904	−104.029	13.585
	500.00	58.116	124.786	102.381	−115.866	11.202	−178.259	−124.626	−98.705	10.312
	600.00	61.672	135.687	107.042	−109.881	17.187	−191.293	−123.122	−93.657	8.154
	700.00	71.463	145.873	111.863	−103.261	23.807	−205.372	−121.067	−88.896	6.634
	730.00	84.351	149.123	113.326	−100.936	26.132	−209.796	−120.128	−87.536	6.264
			16.879		12.322					
LIQ	730.00	61.216	166.002	113.326	−88.614	38.454	−209.796	−120.128	−87.536	6.264
	800.00	60.486	171.574	118.183	−84.355	42.713	−221.614	−106.807	−85.639	5.592
	900.00	59.557	178.644	124.517	−78.354	48.714	−239.133	−105.532	−83.072	4.821
	1000.00	58.695	184.874	130.247	−72.442	54.626	−257.315	−104.435	−80.637	4.212
	1100.00	57.859	190.428	135.470	−66.614	60.454	−276.085	−103.509	−78.303	3.718
	1200.00	57.029	195.427	140.262	−60.870	66.198	−295.382	−102.753	−76.047	3.310
	1300.00	56.195	199.959	144.682	−55.208	71.860	−315.155	−113.566	−73.238	2.943
	1400.00	55.352	204.093	148.781	−49.631	77.437	−335.361	−113.226	−70.149	2.617
	1500.00	54.502	207.883	152.596	−44.138	82.930	−355.962	−112.975	−67.082	2.336
	1600.00	53.647	211.373	156.162	−38.731	88.337	−376.927	−112.813	−64.028	2.090
	1700.00	52.791	214.600	159.506	−33.409	93.659	−398.228	−112.739	−60.982	1.874
	1800.00	51.941	217.593	162.651	−28.172	98.896	−419.840	−112.755	−57.937	1.681

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	Pa2		
LIQ	Pa2	Pa2	Tk1	BPT= 1821., L= 183.7 kJ

143.321

SILVER CHLORIDE (GAS) **AgCl[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	35.642	246.129	246.129	92.550	0.000	19.167	92.550	65.152	−11.414
	300.00	35.662	246.349	246.129	92.616	0.066	18.711	92.538	64.982	−11.314
	400.00	36.351	256.717	247.538	96.222	3.672	−6.465	91.852	55.899	−7.300
	500.00	36.670	264.867	250.218	99.874	7.324	−32.559	91.115	46.995	−4.910
	600.00	36.844	271.569	253.235	103.551	11.001	−59.391	90.310	38.245	−3.330
	700.00	36.948	277.257	256.270	107.241	14.691	−86.839	89.434	29.636	−2.211
	800.00	37.016	282.196	259.209	110.939	18.389	−114.817	88.487	21.158	−1.381
	900.00	37.062	286.558	262.010	114.643	22.093	−143.259	87.465	12.802	−0.743
	1000.00	37.096	290.465	264.664	118.351	25.801	−172.114	86.358	4.565	−0.238
	1100.00	37.120	294.002	267.173	122.062	29.512	−201.340	85.167	−3.558	0.169
	1200.00	37.139	297.233	269.545	125.775	33.225	−230.904	83.892	−11.568	0.504
	1300.00	37.154	300.206	271.791	129.490	36.940	−260.778	71.133	−18.861	0.758
	1400.00	37.165	302.960	273.920	133.206	40.656	−290.938	69.611	−25.726	0.960
	1500.00	37.175	305.524	275.942	136.923	44.373	−321.364	68.086	−32.483	1.131
	1600.00	37.182	307.924	277.867	140.641	48.091	−352.037	66.559	−39.138	1.278
	1700.00	37.189	310.178	279.702	144.359	51.809	−382.943	65.029	−45.697	1.404
	1800.00	37.194	312.304	281.455	148.078	55.528	−414.069	63.495	−52.166	1.514
	1900.00	37.198	314.315	283.132	151.798	59.248	−445.400	61.959	−58.550	1.610
	2000.00	37.202	316.223	284.739	155.518	62.968	−476.928	60.419	−64.852	1.694
	2100.00	37.205	318.038	286.282	159.238	66.688	−508.642	58.876	−71.078	1.768
	2200.00	37.208	319.769	287.765	162.959	70.409	−540.533	57.330	−77.230	1.834

References

Phase	H / S	C_p
GAS	Tk1,e	e

191.319

SILVER CHLORATE **AgClO3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	100.184	141.838	141.838	−30.292	0.000	−72.581	−30.292	65.151	−11.414
	300.00	100.416	142.458	141.840	−30.106	0.186	−72.844	−30.266	65.743	−11.447
	400.00	112.968	173.065	145.928	−19.437	10.855	−88.663	−28.345	97.486	−12.730
	500.00	125.520	199.621	154.063	−7.513	22.779	−107.324	−25.399	128.623	−13.437

References

Phase	H / S	C_p
SOL	Nb1	e

Ag2CrO4 SILVER CHROMATE 331.730

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol		]	[−]
SOL	298.15	142.148	217.568	217.568	−731.782	0.000	−796.650	−731.782	−641.824	112.445
	300.00	142.395	218.448	217.571	−731.519	0.263	−797.053	−731.765	−641.266	111.654
	400.00	153.422	261.012	223.300	−716.697	15.085	−821.102	−730.429	−611.282	79.825
	500.00	162.122	296.207	234.460	−700.909	30.873	−849.012	−728.571	−581.702	60.770

References

Phase	H / S	C_p
SOL	Nb1	Nb1,e

AgF SILVER FLUORIDE 126.867

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol		]	[−]
SOL	298.15	51.921	83.680	83.680	−204.602	0.000	−229.551	−204.602	−186.595	32.691
	300.00	51.961	84.001	83.681	−204.506	0.096	−229.706	−204.582	−186.484	32.470
	400.00	54.107	99.244	85.745	−199.202	5.400	−238.900	−203.443	−180.620	23.587
	500.00	56.254	111.548	89.713	−193.684	10.918	−249.458	−202.211	−175.055	18.288
	600.00	58.400	121.994	94.243	−187.952	16.650	−261.148	−200.879	−169.747	14.778
	700.00	60.547	131.157	98.875	−182.004	22.598	−273.815	−199.433	−164.671	12.288
	708.00	60.718	131.847	99.244	−181.519	23.083	−274.867	−199.313	−164.275	12.120

References

Phase	H / S	C_p	Remarks	
SOL	Nb1/Tk1	e	Tk1	MPT= 708.

126.867

SILVER FLUORIDE (GAS) **AgF**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	33.964	235.752	235.752	7.113	0.000	−63.177	7.113	−20.221	3.543
	300.00	33.983	235.962	235.753	7.176	0.063	−63.613	7.100	−20.390	3.550
	400.00	34.675	245.848	237.096	10.614	3.501	−87.725	6.374	−29.446	3.845
	500.00	34.995	253.624	239.652	14.099	6.986	−112.713	5.572	−38.310	4.002
	600.00	35.169	260.021	242.529	17.608	10.495	−138.405	4.681	−47.004	4.092
	700.00	35.274	265.451	245.426	21.130	14.017	−164.685	3.701	−55.542	4.145
	800.00	35.342	270.165	248.230	24.661	17.548	−191.471	2.637	−63.933	4.174
	900.00	35.388	274.331	250.903	28.198	21.085	−218.700	1.486	−72.186	4.190
	1000.00	35.422	278.061	253.436	31.739	24.626	−246.323	0.242	−80.306	4.195
	1100.00	35.446	281.439	255.830	35.282	28.169	−274.300	−1.092	−88.297	4.193
	1200.00	35.465	284.524	258.095	38.828	31.715	−302.601	−2.518	−96.163	4.186
	1300.00	35.480	287.363	260.238	42.375	35.262	−331.197	−15.431	−103.298	4.151
	1400.00	35.491	289.993	262.271	45.924	38.811	−360.066	−17.111	−109.994	4.104
	1500.00	35.501	292.442	264.202	49.473	42.360	−389.189	−18.797	−116.570	4.059
	1600.00	35.508	294.733	266.039	53.024	45.911	−418.549	−20.489	−123.033	4.017
	1700.00	35.515	296.886	267.791	56.575	49.462	−448.131	−22.186	−129.390	3.976
	1800.00	35.520	298.916	269.464	60.127	53.014	−477.923	−23.887	−135.647	3.936
	1900.00	35.525	300.837	271.065	63.679	56.566	−507.911	−25.594	−141.809	3.899
	2000.00	35.528	302.659	272.600	67.232	60.119	−538.087	−27.305	−147.882	3.862

References

Phase	H / S	C_p
GAS	Tk1	e

AgI SILVER IODIDE 234.773

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL–A	298.15	56.817	115.499	115.499	–61.840	0.000	–96.276	–61.840	–66.238	11.605
	300.00	56.897	115.851	115.500	–61.735	0.105	–96.490	–61.832	–66.265	11.538
	400.00	62.331	132.774	117.776	–55.841	5.999	–108.950	–69.315	–67.536	8.819
	421.00	65.523	136.038	118.606	–54.501	7.339	–111.773	–69.364	–67.442	8.368
			14.608		6.150					
SOL–B	421.00	58.500	150.647	118.606	–48.351	13.489	–111.773	–63.214	–67.442	8.368
	500.00	57.153	160.576	124.478	–43.791	18.049	–124.079	–83.967	–66.277	6.924
	600.00	56.856	170.956	131.386	–38.098	23.742	–140.672	–82.813	–62.849	5.471
	700.00	56.994	179.727	137.681	–32.408	29.432	–158.217	–81.732	–59.608	4.448
	800.00	58.115	187.390	143.425	–26.668	35.172	–176.580	–80.671	–56.519	3.690
	831.00	58.994	189.615	145.107	–24.854	36.986	–182.424	–80.322	–55.590	3.494
			11.329		9.414					
LIQ	831.00	58.576	200.943	145.107	–15.440	46.400	–182.424	–70.908	–55.590	3.494
	900.00	58.576	205.615	149.569	–11.398	50.442	–196.452	–70.155	–54.348	3.154
	1000.00	58.576	211.787	155.488	–5.541	56.299	–217.328	–69.135	–52.648	2.750
	1100.00	58.576	217.370	160.864	0.317	62.157	–238.790	–68.199	–51.045	2.424
	1200.00	58.576	222.467	165.788	6.174	68.014	–260.786	–67.349	–49.524	2.156
	1300.00	58.576	227.155	170.331	12.032	73.872	–283.270	–77.983	–47.462	1.907
	1400.00	58.576	231.496	174.546	17.890	79.730	–306.205	–77.379	–45.137	1.684
	1500.00	58.576	235.538	178.479	23.747	85.587	–329.559	–76.779	–42.855	1.492
	1600.00	58.576	239.318	182.165	29.605	91.445	–353.304	–76.182	–40.613	1.326
	1700.00	58.576	242.869	185.632	35.462	97.302	–377.415	–75.587	–38.408	1.180

References

Phase	H / S	C_p	Remarks	
SOL–A	Nb1	Pa2		
SOL–B	Pa2	Pa2		
LIQ	Pa2	Pa2	Tk1	BPT= 1771., L= 143.9 kJ

234.773

SILVER IODIDE (GAS) AgI[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	39.747	255.497	255.497	125.235	0.000	49.059	125.235	79.097	−13.857
	300.00	39.766	255.743	255.497	125.309	0.074	48.586	125.211	78.810	−13.722
	400.00	40.456	267.291	257.067	129.325	4.090	22.408	115.850	63.822	−8.334
	500.00	40.775	276.357	260.051	133.388	8.153	−4.791	93.212	53.012	−5.538
	600.00	40.948	283.808	263.408	137.475	12.240	−32.810	92.760	45.013	−3.919
	700.00	41.053	290.128	266.785	141.575	16.340	−61.515	92.252	37.095	−2.768
	800.00	41.120	295.615	270.054	145.684	20.449	−90.808	91.682	29.253	−1.910
	900.00	41.167	300.461	273.168	149.799	24.564	−120.616	91.042	21.487	−1.247
	1000.00	41.200	304.800	276.118	153.917	28.682	−150.883	90.323	13.797	−0.721
	1100.00	41.225	308.728	278.907	158.038	32.803	−181.563	89.522	6.182	−0.294
	1200.00	41.244	312.316	281.544	162.162	36.927	−212.617	88.638	−1.356	0.059
	1300.00	41.258	315.618	284.040	166.287	41.052	−244.016	76.272	−8.209	0.330
	1400.00	41.270	318.676	286.406	170.413	45.178	−275.733	75.144	−14.665	0.547
	1500.00	41.279	321.524	288.653	174.541	49.306	−307.745	74.015	−21.040	0.733
	1600.00	41.287	324.188	290.792	178.669	53.434	−340.032	72.883	−27.340	0.893
	1700.00	41.293	326.691	292.830	182.798	57.563	−372.577	71.748	−33.570	1.031
	1800.00	41.298	329.052	294.778	186.928	61.693	−405.365	70.612	−39.732	1.153
	1900.00	41.303	331.285	296.641	191.058	65.823	−438.383	69.473	−45.831	1.260
	2000.00	41.307	333.403	298.427	195.188	69.953	−471.618	68.331	−51.870	1.355

References

Phase	H / S	C_p
GAS	e	e

169.873

SILVER NITRATE AgNO3

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	93.050	140.628	140.628	−124.390	0.000	−166.318	−124.390	−33.283	5.831
	300.00	93.399	141.205	140.630	−124.218	0.172	−166.579	−124.373	−32.718	5.697
	400.00	112.311	170.664	144.519	−113.932	10.458	−182.198	−122.560	−2.392	0.312
	433.00	118.552	179.812	146.862	−110.123	14.267	−187.981	−121.586	7.484	−0.903
			5.797		2.510					
SOL−B	433.00	118.288	185.609	146.862	−107.613	16.777	−187.981	−119.076	7.484	−0.903
	483.00	127.744	199.042	151.572	−101.462	22.928	−197.599	−117.265	22.002	−2.379
			24.255		11.715					
LIQ	483.00	128.030	223.297	151.572	−89.747	34.643	−197.599	−105.550	22.002	−2.379
	500.00	128.030	227.726	154.087	−87.570	36.820	−201.433	−104.862	26.479	−2.766
	600.00	128.030	251.068	168.364	−74.767	49.623	−225.408	−100.954	52.377	−4.560

References

Phase	H / S	C_p
SOL−A	Nb1	La1
SOL−B	La1	La1
LIQ	La1	La1

Ag2O — SILVER OXIDE — 231.736

Phase	T [K]	C_p J / (K mol)	S J / (K mol)	−(G−H298)/T J / (K mol)	H kJ / mol	H−H298 kJ / mol	G kJ / mol	ΔH_f kJ / mol	ΔG_f kJ / mol	log K_f [−]
SOL	298.15	65.860	121.298	121.298	−31.049	0.000	−67.214	−31.049	−11.184	1.959
	300.00	65.994	121.706	121.300	−30.927	0.122	−67.439	−31.048	−11.060	1.926
	400.00	72.107	141.570	123.967	−24.007	7.042	−80.636	−30.729	−4.432	0.579
	500.00	77.128	158.212	129.195	−16.540	14.509	−95.646	−30.002	2.065	−0.216

References

Phase	H / S	C_p
SOL	Nb1	Ku1,e

AgP2 — SILVER DIPHOSPHIDE — 169.816

Phase	T [K]	C_p J / (K mol)	S J / (K mol)	−(G−H298)/T J / (K mol)	H kJ / mol	H−H298 kJ / mol	G kJ / mol	ΔH_f kJ / mol	ΔG_f kJ / mol	log K_f [−]
SOL	298.15	72.550	87.864	87.864	−43.321	0.000	−69.518	−43.321	−32.304	5.659
	300.00	72.592	88.313	87.865	−43.187	0.134	−69.681	−43.322	−32.235	5.613
	400.00	74.894	109.512	90.740	−35.812	7.509	−79.617	−45.008	−28.147	3.676
	500.00	77.195	126.471	96.245	−28.208	15.113	−91.443	−45.274	−23.897	2.497
	600.00	79.496	140.749	102.503	−20.373	22.948	−104.823	−45.368	−19.611	1.707
	700.00	81.797	153.176	108.873	−12.309	31.012	−119.532	−45.296	−15.321	1.143
	800.00	84.098	164.248	115.115	−4.014	39.307	−135.413	−45.059	−11.053	0.722
	900.00	86.400	174.287	121.140	4.511	47.832	−152.347	−44.663	−6.825	0.396

References

Phase	H / S	C_p
SOL	Nb1/Ku1	e

200.789

SILVER TRIPHOSPHIDE

AgP3

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	103.914	105.437	105.437	−69.500	0.000	−100.936	−69.500	−51.477	9.019
	300.00	103.972	106.080	105.439	−69.308	0.192	−101.132	−69.487	−51.365	8.943
	400.00	107.110	136.421	109.554	−58.754	10.746	−113.322	−71.245	−44.852	5.857
	500.00	110.248	160.659	117.430	−47.886	21.614	−128.215	−70.879	−38.291	4.000
	600.00	113.386	181.037	126.376	−36.704	32.796	−145.326	−70.259	−31.827	2.771
	700.00	116.524	198.751	135.477	−25.208	44.292	−164.334	−69.388	−25.487	1.902
	800.00	119.662	214.515	144.389	−13.399	56.101	−185.011	−68.270	−19.289	1.259
	900.00	122.800	228.791	152.986	−1.276	68.224	−207.188	−66.908	−13.246	0.769

References

Phase	H / S	C_p
SOL	Nb1/Ku1	e

247.802

SILVER SULFIDE

Ag2S

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL–A	298.15	76.233	144.009	144.009	−32.593	0.000	−75.529	−32.593	−40.524	7.100
	300.00	76.362	144.481	144.011	−32.452	0.141	−75.796	−32.588	−40.573	7.064
	400.00	81.521	167.227	147.077	−24.533	8.060	−91.424	−34.365	−43.204	5.642
	450.00	83.304	176.935	149.864	−20.411	12.182	−100.032	−34.673	−44.300	5.142
			8.860		3.987					
SOL–B	450.00	82.843	185.795	149.864	−16.424	16.169	−100.032	−30.686	−44.300	5.142
	500.00	82.843	194.523	153.901	−12.282	20.311	−109.543	−31.226	−45.782	4.783
	600.00	82.843	209.627	161.968	−3.997	28.596	−129.774	−31.845	−48.629	4.234
	700.00	82.843	222.398	169.712	4.287	36.880	−151.392	−32.325	−51.389	3.835
	800.00	82.843	233.460	177.005	12.571	45.164	−174.197	−32.986	−54.071	3.530
	860.00	82.843	239.451	181.155	17.542	50.135	−188.386	−33.550	−55.632	3.379
			0.871		0.749					
SOL–C	860.00	82.843	240.322	181.155	18.291	50.884	−188.386	−32.801	−55.632	3.379
	900.00	82.843	244.088	183.869	21.604	54.197	−198.075	−85.886	−55.538	3.223
	1000.00	82.843	252.817	190.335	29.889	62.482	−222.928	−85.325	−52.198	2.727
	1100.00	82.843	260.713	196.380	38.173	70.766	−248.611	−84.932	−48.905	2.322
	1110.00	82.843	261.462	196.963	39.002	71.595	−251.222	−84.902	−48.578	2.286
			7.011		7.782					
LIQ	1110.00	92.885	268.473	196.963	46.784	79.377	−251.222	−77.120	−48.578	2.286
	1200.00	92.885	275.715	202.601	55.143	87.736	−275.714	−76.025	−46.308	2.016
	1300.00	92.885	283.149	208.515	64.432	97.025	−303.662	−97.765	−42.660	1.714
	1400.00	92.885	290.033	214.095	73.720	106.313	−332.326	−97.030	−38.449	1.435

References

Phase	H / S	C_p
SOL–A	Nb1	Pa3
SOL–B	Pa3	Pa3
SOL–C	Pa3	Pa3
LIQ	Pa3	Pa3

Ag2SO4 SILVER SULFATE 311.800

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL–A	298.15	131.455	200.414	200.414	–715.882	0.000	–775.635	–715.882	–618.300	108.324
	300.00	131.670	201.227	200.416	–715.639	0.243	–776.007	–715.883	–617.695	107.550
	400.00	143.344	240.705	205.720	–701.888	13.994	–798.170	–717.771	–584.905	76.381
	500.00	155.017	273.946	216.121	–686.970	28.912	–823.943	–718.083	–551.657	57.631
	600.00	166.691	303.240	228.245	–670.884	44.998	–852.829	–717.220	–518.431	45.133
	700.00	178.364	329.813	240.884	–653.632	62.250	–884.501	–715.240	–485.443	36.224
			26.659		18.661					
SOL–B	700.00	178.364	356.471	240.884	–634.971	80.911	–884.501	–696.579	–485.443	36.224
	800.00	190.037	381.050	256.886	–616.551	99.331	–921.391	–693.779	–455.463	29.739
	900.00	201.711	404.107	271.976	–596.963	118.919	–960.660	–742.935	–424.729	24.651
	933.00	205.563	411.440	276.779	–590.243	125.639	–974.117	–741.018	–413.096	23.127
			19.194		17.908					
LIQ	933.00	205.016	430.634	276.779	–572.335	143.547	–974.117	–723.110	–413.096	23.127
	1000.00	205.016	444.852	287.569	–558.599	157.283	–1003.451	–719.218	–390.971	20.422
	1100.00	205.016	464.392	302.770	–538.098	177.784	–1048.929	–713.627	–358.419	17.020
	1200.00	205.016	482.231	316.992	–517.596	198.286	–1096.273	–708.286	–326.365	14.206

References

Phase	H / S	C_p
SOL–A	Nb1	Ku1
SOL–B	Tk1	Ku1
LIQ	Tk1	La1

294.696

SILVER SELENIDE

Ag2Se

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[	J / (K mol)		] [		kJ / mol		]	[−]
SOL−A	298.15	81.760	150.712	150.712	−37.999	0.000	−82.934	−37.999	−44.886	7.864
	300.00	81.881	151.218	150.713	−37.848	0.151	−83.213	−37.989	−44.929	7.823
	400.00	88.400	175.666	154.003	−29.334	8.665	−99.600	−37.257	−47.344	6.182
	406.00	88.791	176.985	154.333	−28.802	9.197	−100.658	−37.203	−47.495	6.111
			22.569		9.163					
SOL−B	406.00	85.354	199.554	154.333	−19.639	18.360	−100.658	−28.040	−47.495	6.111
	500.00	85.354	217.330	164.563	−11.616	26.383	−120.281	−33.560	−51.963	5.429
	600.00	85.354	232.892	174.694	−3.080	34.919	−142.815	−33.866	−55.617	4.842
	698.00	85.354	245.805	183.794	5.284	43.283	−166.287	−34.290	−59.138	4.426
			0.000		0.000					
SOL−C	698.00	85.354	245.805	183.794	5.284	43.283	−166.287	−34.290	−59.138	4.426
	700.00	85.354	246.049	183.972	5.455	43.454	−166.779	−34.299	−59.209	4.418
	800.00	85.354	257.446	192.460	13.990	51.989	−191.967	−34.864	−62.731	4.096
	900.00	85.354	267.499	200.250	22.526	60.525	−218.224	−35.570	−66.173	3.841
	1000.00	85.354	276.492	207.432	31.061	69.060	−245.431	−36.438	−69.528	3.632
	1100.00	85.354	284.627	214.086	39.596	77.595	−273.494	−90.778	−67.835	3.221
	1170.00	85.354	289.893	218.466	45.571	83.570	−293.604	−90.582	−66.381	2.964

References

Phase	H / S	C_p	Remarks
SOL−A	Nb1	Ku1,e	
SOL−B	Tk1	Ku1,e	
SOL−C	u		

Ag2Te — SILVER TELLURIDE — 343.336

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	84.985	153.553	153.553	−35.982	0.000	−81.764	−35.982	−41.558	7.281
	300.00	85.150	154.079	153.554	−35.825	0.157	−82.048	−35.966	−41.593	7.242
	400.00	94.770	179.865	157.006	−26.838	9.144	−98.784	−34.780	−43.629	5.697
	421.00	96.904	184.768	158.269	−24.826	11.156	−102.613	−34.445	−44.102	5.472
			15.672		6.598					
SOL−B	421.00	85.997	200.440	158.269	−18.228	17.754	−102.613	−27.847	−44.102	5.472
	500.00	85.429	215.182	166.131	−11.456	24.526	−119.048	−27.514	−47.185	4.929
	600.00	84.015	230.618	175.637	−2.993	32.989	−141.364	−27.506	−51.129	4.451
	700.00	84.015	243.569	184.440	5.408	41.390	−165.090	−27.906	−55.040	4.107
	800.00	84.015	254.787	192.548	13.810	49.792	−190.020	−46.281	−56.989	3.721

References

Phase	H / S	C_p	Remarks	
SOL−A	Mi1	Mi1		
SOL−B	Mi1	Mi1	Mi1	MPT= 1232.

Ag2WO4 — SILVER TUNGSTATE — 463.584

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	148.392	205.016	205.016	−925.501	0.000	−986.627	−925.501	−829.112	145.257
	300.00	148.578	205.934	205.019	−925.226	0.275	−987.007	−925.474	−828.514	144.257
	400.00	157.532	249.946	210.959	−909.906	15.595	−1009.885	−923.676	−796.447	104.005
	500.00	165.394	285.954	222.462	−893.755	31.746	−1036.732	−921.367	−764.898	79.908

References

Phase	H / S	C_p
SOL	Nb1/e	H1,e

26.982

ALUMINIUM

Al

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	24.296	28.275	28.275	0.000	0.000	−8.430	0.000	0.000	0.000
	300.00	24.324	28.425	28.275	0.045	0.045	−8.483	0.000	0.000	0.000
	400.00	25.780	35.627	29.247	2.552	2.552	−11.699	0.000	0.000	0.000
	500.00	27.002	41.515	31.129	5.193	5.193	−15.565	0.000	0.000	0.000
	600.00	28.093	46.535	33.289	7.948	7.948	−19.973	0.000	0.000	0.000
	700.00	29.283	50.952	35.502	10.815	10.815	−24.852	0.000	0.000	0.000
	800.00	30.843	54.958	37.687	13.817	13.817	−30.150	0.000	0.000	0.000
	900.00	33.057	58.711	39.816	17.005	17.005	−35.835	0.000	0.000	0.000
	933.45	33.994	59.934	40.515	18.126	18.126	−37.819	0.000	0.000	0.000
			11.475		10.711					
LIQ	933.45	31.748	71.408	40.515	28.837	28.837	−37.819	0.000	0.000	0.000
	1000.00	31.748	73.595	42.645	30.950	30.950	−42.645	0.000	0.000	0.000
	1100.00	31.748	76.621	45.598	34.125	34.125	−50.158	0.000	0.000	0.000
	1200.00	31.748	79.383	48.300	37.299	37.299	−57.960	0.000	0.000	0.000
	1300.00	31.748	81.924	50.790	40.474	40.474	−66.027	0.000	0.000	0.000
	1400.00	31.748	84.277	53.099	43.649	43.649	−74.339	0.000	0.000	0.000
	1500.00	31.748	86.468	55.252	46.824	46.824	−82.877	0.000	0.000	0.000
	1600.00	31.748	88.517	57.267	49.999	49.999	−91.628	0.000	0.000	0.000
	1700.00	31.748	90.441	59.163	53.174	53.174	−100.577	0.000	0.000	0.000
	1800.00	31.748	92.256	60.951	56.348	56.348	−109.712	0.000	0.000	0.000
	1900.00	31.748	93.973	62.645	59.523	59.523	−119.025	0.000	0.000	0.000
	2000.00	31.748	95.601	64.252	62.698	62.698	−128.504	0.000	0.000	0.000
	2100.00	31.748	97.150	65.782	65.873	65.873	−138.142	0.000	0.000	0.000
	2200.00	31.748	98.627	67.242	69.048	69.048	−147.932	0.000	0.000	0.000
	2300.00	31.748	100.038	68.637	72.222	72.222	−157.865	0.000	0.000	0.000
	2400.00	31.748	101.389	69.974	75.397	75.397	−167.937	0.000	0.000	0.000
	2500.00	31.748	102.685	71.257	78.572	78.572	−178.141	0.000	0.000	0.000
	2600.00	31.748	103.931	72.489	81.747	81.747	−188.473	0.000	0.000	0.000
	2700.00	31.748	105.129	73.676	84.922	84.922	−198.926	0.000	0.000	0.000
	2790.81	31.748	106.179	74.717	87.805	87.805	−208.521	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks	
SOL	Ja2	Ja1		
LIQ	Ja2	Ja1	Ja2	BPT= 2790.812, L= 294.001 kJ

Al[g] ALUMINIUM (GAS) 26.982

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	21.388	164.553	164.553	329.700	0.000	280.639	329.700	289.069	−50.644
	300.00	21.381	164.685	164.553	329.740	0.040	280.334	329.695	288.817	−50.287
	400.00	21.119	170.795	165.388	331.863	2.163	263.545	329.311	275.244	−35.943
	500.00	20.998	175.493	166.957	333.968	4.268	246.221	328.775	261.786	−27.349
	600.00	20.932	179.315	168.708	336.064	6.364	228.475	328.116	248.448	−21.629
	700.00	20.892	182.539	170.460	338.155	8.455	210.378	327.341	235.230	−17.553
	800.00	20.867	185.327	172.148	340.243	10.543	191.982	326.426	222.132	−14.504
	900.00	20.849	187.783	173.751	342.329	12.629	173.324	325.324	209.159	−12.139
	1000.00	20.836	189.979	175.266	344.413	14.713	154.434	313.463	197.079	−10.294
	1100.00	20.827	191.965	176.695	346.496	16.796	135.335	312.371	185.493	−8.808
	1200.00	20.820	193.776	178.044	348.578	18.878	116.047	311.279	174.007	−7.574
	1300.00	20.814	195.443	179.320	350.660	20.960	96.585	310.186	162.612	−6.534
	1400.00	20.810	196.985	180.527	352.741	23.041	76.962	309.092	151.301	−5.645
	1500.00	20.806	198.421	181.673	354.822	25.122	57.191	307.998	140.069	−4.878
	1600.00	20.804	199.763	182.762	356.903	27.203	37.281	306.904	128.909	−4.208
	1700.00	20.801	201.025	183.799	358.983	29.283	17.241	305.809	117.818	−3.620
	1800.00	20.799	202.213	184.790	361.063	31.363	−2.921	304.715	106.791	−3.099
	1900.00	20.797	203.338	185.737	363.143	33.443	−23.199	303.620	95.825	−2.634
	2000.00	20.796	204.405	186.643	365.222	35.522	−43.587	302.524	84.917	−2.218
	2100.00	20.795	205.419	187.514	367.302	37.602	−64.079	301.429	74.064	−1.842
	2200.00	20.794	206.387	188.350	369.381	39.681	−84.669	300.334	63.262	−1.502
	2300.00	20.793	207.311	189.154	371.461	41.761	−105.354	299.238	52.511	−1.193
	2400.00	20.792	208.196	189.929	373.540	43.840	−126.130	298.143	41.807	−0.910
	2500.00	20.791	209.045	190.677	375.619	45.919	−146.992	297.047	31.149	−0.651
	2600.00	20.790	209.860	191.399	377.698	47.998	−167.938	295.951	20.535	−0.413
	2700.00	20.790	210.645	192.098	379.777	50.077	−188.963	294.855	9.963	−0.193
	2800.00	20.789	211.401	192.774	381.856	52.156	−210.066	0.000	0.000	0.000
	2900.00	20.789	212.130	193.429	383.935	54.235	−231.243	0.000	0.000	0.000
	3000.00	20.788	212.835	194.064	386.014	56.314	−252.491	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Ja2	Ja1

101.903

ALUMINIUM ARSENIDE

AlAs

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	45.803	60.250	60.250	–116.315	0.000	–134.278	–116.315	–115.202	20.183
	300.00	45.815	60.533	60.250	–116.230	0.085	–134.390	–116.321	–115.195	20.057
	400.00	46.442	73.799	62.055	–111.617	4.698	–141.137	–116.721	–114.764	14.987
	500.00	47.070	84.230	65.483	–106.942	9.373	–149.057	–117.253	–114.216	11.932
	600.00	47.698	92.867	69.348	–102.203	14.112	–157.924	–117.892	–113.550	9.885
	700.00	48.325	100.267	73.249	–97.402	18.913	–167.589	–118.636	–112.769	8.415
	800.00	48.953	106.761	77.040	–92.538	23.777	–177.947	–119.506	–111.873	7.305
	900.00	49.580	112.563	80.670	–87.612	28.703	–188.918	–120.550	–110.859	6.434
	1000.00	50.208	117.819	84.126	–82.622	33.693	–200.441	–132.316	–108.959	5.691
	1100.00	50.836	122.634	87.411	–77.570	38.745	–212.467	–133.275	–106.577	5.061
	1200.00	51.463	127.084	90.534	–72.455	43.860	–224.956	–134.286	–104.106	4.532
	1300.00	52.091	131.228	93.507	–67.277	49.038	–237.874	–135.521	–101.543	4.080
	1400.00	52.718	135.111	96.341	–62.037	54.278	–251.193	–137.233	–98.869	3.689
	1500.00	53.346	138.770	99.049	–56.734	59.581	–264.889	–236.221	–89.621	3.121

References

Phase	H / S	C_p	Remarks
SOL	Tk1	e	Tk1 MPT= 2013.

165.901

ALUMINIUM ARSENATE

AlAsO4

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	118.341	145.603	145.603	–1431.054	0.000	–1474.466	–1431.054	–1333.060	233.547
	300.00	118.677	146.336	145.605	–1430.835	0.219	–1474.736	–1431.034	–1332.452	232.001
	400.00	131.754	182.463	150.442	–1418.246	12.808	–1491.231	–1429.401	–1299.812	169.738
	500.00	139.762	212.778	159.961	–1404.646	26.408	–1511.034	–1427.126	–1267.670	132.433
	600.00	145.775	238.810	170.984	–1390.358	40.696	–1533.644	–1424.535	–1236.018	107.605
	700.00	150.846	261.671	182.339	–1375.521	55.533	–1558.691	–1421.752	–1204.816	89.904
	800.00	155.415	282.116	193.555	–1360.205	70.849	–1585.898	–1418.844	–1174.023	76.656
	874.00	158.600	296.005	201.648	–1348.586	82.468	–1607.295	–1416.645	–1151.475	68.818

References

Phase	H / S	C_p
SOL	G1	G1

AlB2 ALUMINIUM DIBORIDE 48.604

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	43.644	34.727	34.727	−150.996	0.000	−161.350	−150.996	−149.443	26.182
	300.00	43.892	34.998	34.728	−150.915	0.081	−161.414	−151.002	−149.434	26.019
	400.00	53.613	49.097	36.585	−145.991	5.005	−165.630	−151.314	−148.865	19.440
	500.00	59.651	61.749	40.377	−140.310	10.686	−171.184	−151.735	−148.207	15.483
	600.00	64.241	73.045	44.897	−134.108	16.888	−177.934	−152.249	−147.454	12.837
	700.00	68.146	83.247	49.659	−127.484	23.512	−185.757	−152.803	−146.611	10.940
	800.00	71.686	92.580	54.448	−120.490	30.506	−194.555	−153.377	−145.688	9.512
	900.00	75.015	101.218	59.171	−113.154	37.842	−204.250	−153.993	−144.690	8.398
	1000.00	78.212	109.288	63.783	−105.492	45.504	−214.779	−165.201	−142.862	7.462
	1100.00	81.322	116.888	68.269	−97.515	53.481	−226.092	−165.459	−140.614	6.677
	1200.00	84.374	124.096	72.623	−89.229	61.767	−238.144	−165.526	−138.351	6.022
	1300.00	87.385	130.968	76.849	−80.641	70.355	−250.900	−165.395	−136.091	5.468

References

Phase	H / S	C_p	Remarks	
SOL	Nb1/e	e	Tk1	DPT= 1673. (LIQ + AlB12)

156.714

ALUMINIUM DODECABORIDE

AlB12

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	149.579	118.826	118.826	−266.102	0.000	−301.530	−266.102	−272.241	47.696
	300.00	150.973	119.755	118.828	−265.824	0.278	−301.751	−266.121	−272.279	47.408
	400.00	203.970	171.300	125.497	−247.780	18.322	−316.301	−266.961	−274.207	35.808
	500.00	234.681	220.353	139.631	−225.741	40.361	−335.918	−268.330	−275.874	28.820
	600.00	256.619	265.166	156.877	−201.129	64.973	−360.228	−270.240	−277.210	24.133
	700.00	274.415	306.097	175.313	−174.553	91.549	−388.821	−272.392	−278.203	20.760
	800.00	290.004	343.776	194.047	−146.318	119.784	−421.339	−274.556	−278.885	18.209
	900.00	304.309	378.769	212.650	−116.595	149.507	−457.487	−276.606	−279.302	16.210
	1000.00	317.817	411.536	230.917	−85.483	180.619	−497.019	−288.989	−278.741	14.560
	1100.00	330.804	442.440	248.755	−53.049	213.053	−539.732	−290.089	−277.659	13.185
	1200.00	343.437	471.767	266.127	−19.334	246.768	−585.455	−290.616	−276.501	12.036
	1300.00	355.819	499.747	283.030	15.630	281.732	−634.041	−290.524	−275.324	11.063
	1400.00	368.021	526.564	299.474	51.824	317.926	−685.365	−289.779	−274.179	10.230
	1500.00	380.089	552.367	315.478	89.230	355.332	−739.320	−288.357	−273.110	9.511
	1600.00	392.054	577.279	331.067	127.838	393.940	−795.809	−286.238	−272.158	8.885
	1700.00	403.941	601.405	346.263	167.638	433.740	−854.749	−283.406	−271.361	8.338
	1800.00	415.766	624.828	361.091	208.624	474.726	−916.066	−279.849	−270.752	7.857
	1900.00	427.542	647.623	375.575	250.790	516.892	−979.694	−275.558	−270.360	7.433
	2000.00	439.278	669.852	389.735	294.131	560.233	−1045.572	−270.523	−270.214	7.057
	2100.00	450.983	691.567	403.593	338.644	604.746	−1113.647	−264.738	−270.337	6.724
	2200.00	462.660	712.817	417.167	384.327	650.429	−1183.870	−258.197	−270.754	6.429
	2300.00	474.317	733.640	430.476	431.176	697.278	−1256.196	−250.892	−271.486	6.166
	2400.00	485.954	754.073	443.535	479.190	745.292	−1330.585	−845.934	−259.725	5.653
	2423.00	488.629	758.720	446.504	490.397	756.499	−1347.982	−844.219	−254.116	5.478

References

Phase	H / S	C_p	Remarks
SOL	Nb1/e	e	Tk1 MPT= 2423.

AlBr[g] ALUMINIUM MONOBROMIDE (GAS) 106.886

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[	J / (K mol)	]	[		kJ / mol		]	[−]
GAS	298.15	35.598	239.620	239.620	15.900	0.000	−55.543	15.900	−24.422	4.279
	300.00	35.621	239.840	239.621	15.966	0.066	−55.986	15.851	−24.672	4.296
	400.00	36.473	250.221	241.030	19.576	3.676	−80.512	−0.287	−34.905	4.558
	500.00	36.899	258.410	243.716	23.247	7.347	−105.958	−1.103	−43.467	4.541
	600.00	37.157	265.162	246.744	26.951	11.051	−132.146	−2.013	−51.856	4.514
	700.00	37.336	270.904	249.796	30.676	14.776	−158.957	−3.023	−60.085	4.484
	800.00	37.472	275.898	252.753	34.416	18.516	−186.302	−4.158	−68.160	4.450
	900.00	37.584	280.319	255.575	38.169	22.269	−214.117	−5.472	−76.084	4.416
	1000.00	37.681	284.284	258.251	41.933	26.033	−242.351	−17.537	−83.091	4.340
	1100.00	37.768	287.879	260.784	45.705	29.805	−270.962	−18.825	−89.585	4.254
	1200.00	37.848	291.169	263.181	49.486	33.586	−299.917	−20.109	−95.960	4.177
	1300.00	37.923	294.201	265.452	53.275	37.375	−329.187	−21.388	−102.230	4.108
	1400.00	37.995	297.014	267.607	57.071	41.171	−358.750	−22.663	−108.400	4.044
	1500.00	38.065	299.638	269.656	60.874	44.974	−388.584	−23.933	−114.480	3.987
	1600.00	38.132	302.097	271.607	64.683	48.783	−418.672	−25.199	−120.475	3.933
	1700.00	38.198	304.411	273.470	68.500	52.600	−448.998	−26.461	−126.391	3.884
	1800.00	38.263	306.596	275.250	72.323	56.423	−479.550	−27.720	−132.233	3.837
	1900.00	38.326	308.666	276.955	76.152	60.252	−510.314	−28.974	−138.005	3.794
	2000.00	38.389	310.634	278.590	79.988	64.088	−541.279	−30.225	−143.711	3.753
	2100.00	38.452	312.508	280.161	83.830	67.930	−572.437	−31.471	−149.355	3.715
	2200.00	38.513	314.299	281.672	87.678	71.778	−603.778	−32.714	−154.939	3.679
	2300.00	38.575	316.012	283.128	91.533	75.633	−635.294	−33.954	−160.467	3.644
	2400.00	38.636	317.655	284.533	95.393	79.493	−666.978	−35.189	−165.941	3.612
	2500.00	38.697	319.233	285.889	99.260	83.360	−698.823	−36.421	−171.364	3.580
	2600.00	38.757	320.752	287.201	103.133	87.233	−730.823	−37.650	−176.738	3.551
	2700.00	38.818	322.216	288.471	107.012	91.112	−762.972	−38.874	−182.064	3.522
	2800.00	38.878	323.629	289.702	110.896	94.996	−795.265	−333.855	−186.776	3.484
	2900.00	38.938	324.994	290.895	114.787	98.887	−827.696	−333.976	−181.521	3.270
	3000.00	38.998	326.315	292.054	118.684	102.784	−860.262	−334.094	−176.262	3.069

References

Phase	H / S	C_p
GAS	Ja2	Ja1

266.694

ALUMINIUM BROMIDE **AlBr3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol		]	[−]
SOL	298.15	100.508	180.220	180.220	−511.280	0.000	−565.013	−511.280	−488.510	85.585
	300.00	100.822	180.843	180.222	−511.094	0.186	−565.347	−511.349	−488.369	85.033
	370.60	112.794	203.371	182.521	−503.553	7.727	−578.922	−555.669	−477.750	67.337
			30.356		11.250					
LIQ	370.60	124.972	233.727	182.521	−492.303	18.977	−578.922	−544.419	−477.750	67.337
	400.00	124.972	243.268	186.640	−488.629	22.651	−585.936	−543.114	−472.512	61.704
	500.00	124.972	271.154	200.858	−476.132	35.148	−611.709	−538.796	−455.365	47.572
	526.30	124.972	277.561	204.532	−472.845	38.435	−618.925	−537.687	−451.005	44.762

References

Phase	H / S	C_p	Remarks	
SOL	Ja2	Ja1	Ja1	MPT= 370.6
LIQ	Ja2	Ja1	Ja1	BPT= 526.3 GAS (Al2Br6), L= 23.87 kJ

AlBr3[g] ALUMINIUM BROMIDE (GAS) 266.694

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	77.274	349.440	349.440	−410.450	0.000	−514.636	−410.450	−438.133	76.759
	300.00	77.336	349.918	349.441	−410.307	0.143	−515.282	−410.562	−438.305	76.316
	400.00	79.656	372.525	352.508	−402.443	8.007	−551.453	−456.928	−438.029	57.201
	500.00	80.833	390.440	358.365	−394.413	16.037	−589.633	−457.077	−433.289	45.265
	600.00	81.507	405.242	364.980	−386.293	24.157	−629.438	−457.289	−428.512	37.305
	700.00	81.927	417.840	371.654	−378.120	32.330	−670.608	−457.586	−423.694	31.616
	800.00	82.205	428.799	378.127	−369.912	40.538	−712.952	−458.002	−418.826	27.347
	900.00	82.399	438.494	384.306	−361.681	48.769	−756.326	−458.596	−413.895	24.022
	1000.00	82.539	447.183	390.167	−353.434	57.016	−800.617	−469.942	−408.129	21.318
	1100.00	82.644	455.055	395.714	−345.175	65.275	−845.735	−470.517	−401.919	19.086
	1200.00	82.723	462.249	400.963	−336.906	73.544	−891.606	−471.092	−395.658	17.223
	1300.00	82.785	468.873	405.935	−328.631	81.819	−938.166	−471.670	−389.348	15.644
	1400.00	82.834	475.010	410.653	−320.350	90.100	−985.364	−472.251	−382.994	14.290
	1500.00	82.874	480.727	415.136	−312.064	98.386	−1033.154	−472.836	−376.598	13.114
	1600.00	82.906	486.076	419.404	−303.775	106.675	−1081.497	−473.425	−370.163	12.085
	1700.00	82.932	491.103	423.476	−295.483	114.967	−1130.359	−474.020	−363.691	11.175
	1800.00	82.954	495.844	427.366	−287.189	123.261	−1179.708	−474.620	−357.184	10.365
	1900.00	82.972	500.330	431.089	−278.892	131.558	−1229.519	−475.225	−350.643	9.640
	2000.00	82.987	504.586	434.658	−270.594	139.856	−1279.767	−475.837	−344.070	8.986
	2100.00	83.000	508.635	438.085	−262.295	148.155	−1330.429	−476.454	−337.467	8.394
	2200.00	83.011	512.497	441.381	−253.995	156.455	−1381.487	−477.078	−330.834	7.855
	2300.00	83.021	516.187	444.553	−245.693	164.757	−1432.923	−477.708	−324.172	7.362
	2400.00	83.028	519.720	447.612	−237.390	173.060	−1484.720	−478.344	−317.483	6.910
	2500.00	83.035	523.110	450.565	−229.087	181.363	−1536.862	−478.987	−310.768	6.493
	2600.00	83.041	526.367	453.418	−220.783	189.667	−1589.337	−479.637	−304.026	6.108
	2700.00	83.046	529.501	456.178	−212.479	197.971	−1642.131	−480.293	−297.259	5.751
	2800.00	83.050	532.521	458.851	−204.174	206.276	−1695.233	−774.715	−289.899	5.408
	2900.00	83.054	535.436	461.442	−195.869	214.581	−1748.632	−774.289	−272.592	4.910
	3000.00	83.057	538.251	463.956	−187.564	222.886	−1802.317	−773.869	−255.299	4.445

References

Phase	H / S	C_p
GAS	Ja2	Ja1

533.387

DIALUMINIUM HEXABROMIDE (GAS) **Al2Br6**[g]

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	168.304	547.200	547.200	–937.200	0.000	–1100.348	–937.200	–947.343	165.971
	300.00	168.455	548.242	547.203	–936.888	0.312	–1101.361	–937.398	–947.406	164.958
	400.00	174.155	597.583	553.892	–919.724	17.476	–1158.757	–1028.693	–931.909	121.695
	500.00	177.086	636.792	566.686	–902.147	35.053	–1220.543	–1027.475	–907.855	94.843
	600.00	178.775	669.240	581.152	–884.347	52.853	–1285.891	–1026.340	–884.039	76.962
	700.00	179.833	696.884	595.759	–866.413	70.787	–1354.232	–1025.345	–860.404	64.204
	800.00	180.537	720.946	609.936	–848.392	88.808	–1425.149	–1024.572	–836.897	54.644
	900.00	181.027	742.240	623.476	–830.312	106.888	–1498.329	–1024.141	–813.467	47.212
	1000.00	181.382	761.333	636.324	–812.191	125.009	–1573.524	–1045.207	–788.547	41.189
	1100.00	181.647	778.633	648.487	–794.039	143.161	–1650.536	–1044.723	–762.904	36.227
	1200.00	181.849	794.448	660.001	–775.864	161.336	–1729.201	–1044.236	–737.306	32.094
	1300.00	182.006	809.010	670.910	–757.671	179.529	–1809.384	–1043.749	–711.748	28.598
	1400.00	182.131	822.503	681.262	–739.464	197.736	–1890.967	–1043.266	–686.228	25.603
	1500.00	182.231	835.072	691.102	–721.245	215.955	–1973.853	–1042.789	–660.742	23.009
	1600.00	182.312	846.836	700.472	–703.018	234.182	–2057.955	–1042.319	–635.287	20.740
	1700.00	182.379	857.890	709.410	–684.783	252.417	–2143.197	–1041.857	–609.862	18.739
	1800.00	182.434	868.316	717.951	–666.543	270.657	–2229.512	–1041.405	–584.463	16.961
	1900.00	182.480	878.181	726.127	–648.297	288.903	–2316.842	–1040.963	–559.090	15.370
	2000.00	182.519	887.542	733.966	–630.047	307.153	–2405.132	–1040.531	–533.739	13.940

References

Phase	H / S	C_p
GAS	Ja2	Ja1

Al4C3 TETRAALUMINIUM TRICARBIDE 143.959

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[	J / (K mol)	]	[		kJ / mol		]	[−]
SOL	298.15	116.075	88.952	88.952	−208.798	0.000	−235.319	−208.798	−196.464	34.420
	300.00	116.709	89.672	88.954	−208.583	0.215	−235.484	−208.810	−196.387	34.194
	400.00	139.969	126.852	93.865	−195.603	13.195	−246.344	−208.969	−192.202	25.099
	500.00	152.278	159.525	103.806	−180.938	27.860	−260.701	−208.861	−188.024	19.643
	600.00	160.277	188.038	115.520	−165.287	43.511	−278.110	−208.970	−183.852	16.006
	700.00	166.241	213.211	127.714	−148.950	59.848	−298.197	−209.435	−179.634	13.404
	800.00	171.120	235.737	139.833	−132.075	76.723	−320.665	−210.340	−175.321	11.447
	900.00	175.368	256.142	151.640	−114.746	94.052	−345.274	−211.863	−170.860	9.916
	1000.00	179.224	274.821	163.038	−97.014	111.784	−371.836	−256.269	−163.156	8.522
	1100.00	182.825	292.074	173.994	−78.910	129.888	−400.191	−257.431	−153.787	7.303
	1200.00	186.251	308.129	184.510	−60.455	148.343	−430.210	−258.412	−144.320	6.282
	1300.00	189.555	323.169	194.604	−41.664	167.134	−461.783	−259.195	−134.780	5.416
	1400.00	192.769	337.334	204.298	−22.547	186.251	−494.815	−259.765	−125.187	4.671
	1500.00	195.918	350.742	213.618	−3.112	205.686	−529.225	−260.107	−115.560	4.024
	1600.00	199.016	363.485	222.590	16.635	225.433	−564.941	−260.211	−105.919	3.458
	1700.00	202.076	375.642	231.238	36.690	245.488	−601.902	−260.068	−96.279	2.958
	1800.00	205.106	387.279	239.586	57.049	265.847	−640.052	−259.669	−86.655	2.515

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	A1	A1	MPT= 2500.

94.041

2–ALUMINIUM CALCIUM

Al2Ca

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	72.599	85.354	85.354	–219.660	0.000	–245.108	–219.660	–215.898	37.824
	300.00	72.769	85.803	85.355	–219.526	0.134	–245.266	–219.662	–215.875	37.587
	400.00	79.015	107.705	88.299	–211.897	7.763	–254.980	–219.622	–214.612	28.025
	500.00	82.333	125.725	94.037	–203.816	15.844	–266.678	–219.516	–213.373	22.291
	600.00	84.498	140.938	100.619	–195.468	24.192	–280.031	–219.536	–212.145	18.469
	700.00	86.120	154.091	107.339	–186.934	32.726	–294.798	–219.802	–210.896	15.737
	800.00	87.451	165.680	113.922	–178.254	41.406	–310.798	–221.168	–209.495	13.679
	900.00	88.614	176.048	120.259	–169.450	50.210	–327.893	–222.211	–207.981	12.071
	1000.00	89.671	185.440	126.315	–160.535	59.125	–345.975	–245.070	–204.794	10.697
	1100.00	90.661	194.033	132.086	–151.518	68.142	–364.954	–246.699	–200.690	9.530
	1200.00	91.604	201.963	137.583	–142.404	77.256	–384.759	–255.591	–195.808	8.523
	1300.00	92.514	209.331	142.822	–133.198	86.462	–405.328	–255.663	–190.822	7.667
	1352.00	92.978	212.969	145.450	–128.375	91.285	–416.309	–255.665	–188.229	7.272
			38.993		52.718					
LIQ	1352.00	94.140	251.961	145.450	–75.657	144.003	–416.309	–202.947	–188.229	7.272
	1400.00	94.140	255.246	149.159	–71.138	148.522	–428.482	–202.882	–187.707	7.003
	1500.00	94.140	261.740	156.450	–61.724	157.936	–454.335	–202.746	–186.628	6.499
	1600.00	94.140	267.816	163.223	–52.310	167.350	–480.816	–202.611	–185.558	6.058
	1700.00	94.140	273.523	169.545	–42.896	176.764	–507.886	–202.475	–184.496	5.669
	1800.00	94.140	278.904	175.472	–33.482	186.178	–535.510	–355.644	–179.479	5.208

References

Phase	H / S	C_p
SOL	Hu1/Ku1	e
LIQ	Hu1	e

148.004

4–ALUMINIUM CALCIUM

Al4Ca

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	121.287	138.072	138.072	–215.476	0.000	–256.642	–215.476	–210.572	36.891
	300.00	121.503	138.823	138.074	–215.251	0.225	–256.898	–215.478	–210.541	36.658
	400.00	130.258	175.089	142.960	–202.624	12.852	–272.660	–215.452	–208.894	27.279
	500.00	136.064	204.811	152.447	–189.294	26.182	–291.699	–215.379	–207.264	21.653
	600.00	140.708	230.040	163.329	–175.449	40.027	–313.473	–215.412	–205.641	17.903
	700.00	144.804	252.043	174.463	–161.170	54.306	–337.600	–215.667	–203.996	15.222
	800.00	148.608	271.630	185.407	–146.498	68.978	–363.802	–217.045	–202.199	13.202
	900.00	152.242	289.344	195.987	–131.454	84.022	–391.864	–218.226	–200.282	11.624
	973.00	154.826	301.317	203.445	–120.246	95.230	–413.428	–262.163	–196.964	10.574

References

Phase	H / S	C_p	Remarks
SOL	Hu1/Ku1	e	Hu1 DPT= 973. (peritec.)

Al2Ce — 2–ALUMINIUM CERIUM — 194.078

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[–]
SOL	298.15	74.680	108.240	108.240	–163.176	0.000	–195.448	–163.176	–157.880	27.660
	300.00	74.849	108.703	108.242	–163.038	0.138	–195.648	–163.177	–157.847	27.484
	400.00	81.016	131.195	111.266	–155.204	7.972	–207.683	–163.121	–156.073	20.381
	500.00	84.178	149.645	117.154	–146.930	16.246	–221.753	–163.033	–154.323	16.122
	600.00	86.157	165.179	123.898	–138.407	24.769	–237.515	–163.065	–152.581	13.283
	700.00	87.579	178.572	130.774	–129.717	33.459	–254.718	–163.308	–150.818	11.254
	800.00	88.702	190.343	137.499	–120.901	42.275	–273.175	–163.859	–149.001	9.729
	900.00	89.653	200.846	143.965	–111.982	51.194	–292.744	–164.844	–147.090	8.537
	1000.00	90.496	210.337	150.135	–102.974	60.202	–313.311	–190.408	–143.521	7.497
	1100.00	91.269	218.998	156.007	–93.886	69.290	–334.784	–196.893	–138.635	6.583
	1200.00	91.994	226.971	161.593	–84.722	78.454	–357.088	–197.849	–133.296	5.802
	1300.00	92.685	234.362	166.910	–75.488	87.688	–380.159	–198.734	–127.880	5.138
	1400.00	93.352	241.255	171.977	–66.186	96.990	–403.943	–199.551	–122.399	4.567

References

Phase	H / S	C_p	Remarks	
SOL	W1/Nb1	e	Hu1	MPT= 1753.

Al4Ce — 4–ALUMINIUM CERIUM — 248.041

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[–]
SOL	298.15	123.147	161.921	161.921	–163.009	0.000	–211.286	–163.009	–156.857	27.481
	300.00	123.363	162.683	161.923	–162.781	0.228	–211.586	–163.011	–156.819	27.305
	400.00	132.010	199.472	166.880	–149.972	13.037	–229.761	–162.992	–154.754	20.209
	500.00	137.654	229.568	176.499	–136.475	26.534	–251.259	–162.962	–152.700	15.952
	600.00	142.114	255.071	187.523	–122.480	40.529	–275.523	–163.033	–150.642	13.115
	700.00	146.016	277.276	198.792	–108.070	54.939	–302.163	–163.290	–148.561	11.086
	800.00	149.621	297.012	209.858	–93.286	69.723	–330.896	–163.877	–146.421	9.560
	900.00	153.053	314.834	220.548	–78.152	84.857	–361.502	–165.023	–144.178	8.368
	928.00	153.992	319.537	223.464	–73.853	89.156	–370.384	–165.486	–143.522	8.078

References

Phase	H / S	C_p	Remarks	
SOL	Nb1/Ku1	e	Hu1	TPT= 523. / MPT= 928.

62.434

ALUMINIUM MONOCHLORIDE (GAS) **AlCl**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	34.652	227.957	227.957	−51.460	0.000	−119.425	−51.460	−77.734	13.619
	300.00	34.683	228.171	227.958	−51.396	0.064	−119.847	−51.472	−77.897	13.563
	400.00	35.809	238.324	229.334	−47.864	3.596	−143.194	−52.181	−86.601	11.309
	500.00	36.397	246.383	231.966	−44.251	7.209	−167.443	−52.994	−95.114	9.937
	600.00	36.775	253.055	234.941	−40.592	10.868	−192.424	−53.907	−103.454	9.006
	700.00	37.052	258.745	237.945	−36.900	14.560	−218.021	−54.921	−111.634	8.330
	800.00	37.276	263.708	240.862	−33.183	18.277	−244.149	−56.059	−119.659	7.813
	900.00	37.424	268.107	243.649	−29.448	22.012	−270.744	−57.374	−127.533	7.402
	1000.00	37.543	272.057	246.296	−25.699	25.761	−297.756	−69.441	−134.490	7.025
	1100.00	37.642	275.640	248.803	−21.940	29.520	−325.143	−70.734	−140.932	6.692
	1200.00	37.729	278.919	251.178	−18.171	33.289	−352.874	−72.022	−147.257	6.410
	1300.00	37.807	281.942	253.430	−14.394	37.066	−380.919	−73.306	−153.474	6.167
	1400.00	37.878	284.746	255.568	−10.610	40.850	−409.255	−74.587	−159.593	5.954
	1500.00	37.945	287.362	257.601	−6.819	44.641	−437.862	−75.865	−165.620	5.767
	1600.00	38.008	289.813	259.539	−3.021	48.439	−466.722	−77.140	−171.562	5.601
	1700.00	38.068	292.119	261.388	0.783	52.243	−495.819	−78.413	−177.424	5.452
	1800.00	38.126	294.297	263.156	4.592	56.052	−525.141	−79.683	−183.212	5.317
	1900.00	38.182	296.359	264.850	8.408	59.868	−554.675	−80.952	−188.929	5.194
	2000.00	38.236	298.319	266.475	12.229	63.689	−584.410	−82.218	−194.579	5.082

References

Phase	H / S	C_p
GAS	Ja2	Ja1

AlCl2[g] ALUMINIUM DICHLORIDE (GAS) 97.887

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	51.635	289.420	289.420	−280.300	0.000	−366.591	−280.300	−291.638	51.094
	300.00	51.696	289.740	289.421	−280.204	0.096	−367.126	−280.312	−291.708	50.791
	400.00	54.115	304.980	291.482	−274.901	5.399	−396.893	−280.983	−295.407	38.576
	500.00	55.432	317.211	295.446	−269.417	10.883	−428.023	−281.711	−298.931	31.229
	600.00	56.213	327.392	299.945	−263.832	16.468	−460.267	−282.516	−302.300	26.318
	700.00	56.711	336.097	304.503	−258.184	22.116	−493.452	−283.411	−305.528	22.799
	800.00	57.046	343.693	308.937	−252.495	27.805	−527.450	−284.430	−308.620	20.151
	900.00	57.281	350.427	313.180	−246.778	33.522	−562.162	−285.627	−311.574	18.083
	1000.00	57.453	356.471	317.212	−241.041	39.259	−597.512	−297.576	−313.625	16.382
	1100.00	57.581	361.953	321.034	−235.289	45.011	−633.438	−298.752	−315.173	14.966
	1200.00	57.679	366.968	324.656	−229.526	50.774	−669.887	−299.928	−316.614	13.782
	1300.00	57.756	371.588	328.091	−223.754	56.546	−706.818	−301.104	−317.957	12.776
	1400.00	57.817	375.870	331.353	−217.975	62.325	−744.194	−302.281	−319.209	11.910
	1500.00	57.866	379.861	334.455	−212.191	68.109	−781.983	−303.460	−320.377	11.157
	1600.00	57.906	383.597	337.411	−206.402	73.898	−820.158	−304.643	−321.466	10.495
	1700.00	57.938	387.109	340.232	−200.610	79.690	−858.695	−305.828	−322.481	9.909
	1800.00	57.965	390.421	342.929	−194.815	85.485	−897.573	−307.018	−323.426	9.386
	1900.00	57.988	393.556	345.512	−189.017	91.283	−936.773	−308.213	−324.305	8.916
	2000.00	58.007	396.530	347.989	−183.217	97.083	−976.278	−309.413	−325.121	8.491

References

Phase	H / S	C_p
GAS	Ja2	Ja1

AlCl3 ALUMINIUM CHLORIDE 133.340

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	91.132	109.290	109.290	−705.630	0.000	−738.215	−705.630	−630.001	110.374
	300.00	91.295	109.854	109.292	−705.461	0.169	−738.418	−705.600	−629.532	109.611
	400.00	100.081	137.321	112.978	−695.892	9.738	−750.821	−703.739	−604.442	78.932
	465.70	105.854	152.969	117.533	−689.127	16.503	−760.365	−702.202	−588.248	65.980
			75.907		35.350					
LIQ	465.70	125.520	228.877	117.533	−653.777	51.853	−760.365	−666.852	−588.248	65.980
	500.00	125.520	237.797	125.481	−649.472	56.158	−768.371	−665.316	−582.514	60.855
	600.00	125.520	260.682	146.165	−636.920	68.710	−793.329	−660.972	−566.365	49.306
	700.00	125.520	280.031	163.942	−624.368	81.262	−820.390	−656.802	−550.929	41.111
	800.00	125.520	296.792	179.524	−611.816	93.814	−849.250	−652.810	−536.080	35.002
	900.00	125.520	311.576	193.392	−599.264	106.366	−879.682	−649.035	−521.718	30.280
	1000.00	125.520	324.801	205.883	−586.712	118.918	−911.513	−656.040	−507.004	26.483

References

Phase	H / S	C_p	Remarks
SOL	Ja2	Ja1	Ja1 SPT= 454.1 GAS(Al2Cl6), L= 115.73 kJ
LIQ	Ja2	Ja1	

133.340 ALUMINIUM CHLORIDE (GAS) **AlCl3**[g]

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[———	J / (K mol)	———]	[———	———	kJ / mol	———	———]	[–]
GAS	298.15	71.863	314.490	314.490	−584.590	0.000	−678.355	−584.590	−570.142	99.886
	300.00	71.964	314.935	314.491	−584.457	0.133	−678.937	−584.596	−570.052	99.255
	400.00	76.014	336.251	317.370	−577.038	7.552	−711.538	−584.884	−565.159	73.802
	500.00	78.275	353.479	322.925	−569.313	15.277	−746.052	−585.157	−560.196	58.523
	600.00	79.633	367.880	329.250	−561.412	23.178	−782.140	−585.464	−555.176	48.332
	700.00	80.504	380.226	335.672	−553.402	31.188	−819.560	−585.836	−550.100	41.049
	800.00	81.092	391.016	341.930	−545.321	39.269	−858.134	−586.314	−544.964	35.582
	900.00	81.508	400.593	347.926	−537.190	47.400	−897.723	−586.960	−539.758	31.327
	1000.00	81.811	409.197	353.630	−529.023	55.567	−938.220	−598.350	−533.711	27.878
	1100.00	82.038	417.006	359.042	−520.830	63.760	−979.536	−598.963	−527.218	25.035
	1200.00	82.212	424.152	364.174	−512.617	71.973	−1021.599	−599.570	−520.669	22.664
	1300.00	82.349	430.738	369.044	−504.389	80.201	−1064.348	−600.176	−514.069	20.656
	1400.00	82.457	436.845	373.672	−496.148	88.442	−1107.730	−600.782	−507.422	18.932
	1500.00	82.544	442.537	378.075	−487.898	96.692	−1151.703	−601.390	−500.733	17.437
	1600.00	82.615	447.866	382.272	−479.640	104.950	−1196.226	−602.001	−494.002	16.128
	1700.00	82.673	452.876	386.280	−471.375	113.215	−1241.265	−602.616	−487.234	14.971
	1800.00	82.722	457.603	390.112	−463.106	121.484	−1286.792	−603.236	−480.429	13.942
	1900.00	82.762	462.077	393.783	−454.831	129.759	−1332.778	−603.863	−473.589	13.020
	2000.00	82.796	466.323	397.305	−446.553	138.037	−1379.199	−604.497	−466.716	12.189

References

Phase	H / S	C_p
GAS	Ja2	Ja1

Al2Cl6[g] DIALUMINIUM HEXACHLORIDE (GAS) 266.679

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	157.867	475.000	475.000	−1295.740	0.000	−1437.361	−1295.740	−1220.934	213.903
	300.00	158.107	475.977	475.003	−1295.448	0.292	−1438.241	−1295.726	−1220.470	212.503
	400.00	167.460	522.892	481.336	−1279.118	16.622	−1488.274	−1294.811	−1195.516	156.118
	500.00	172.484	560.852	493.565	−1262.097	33.643	−1542.523	−1293.785	−1170.811	122.314
	600.00	175.444	592.583	507.497	−1244.688	51.052	−1600.238	−1292.792	−1146.310	99.795
	700.00	177.321	619.779	521.641	−1227.044	68.696	−1660.889	−1291.911	−1121.968	83.722
	800.00	178.582	643.544	535.425	−1209.245	86.495	−1724.080	−1291.232	−1097.740	71.675
	900.00	179.467	664.632	548.632	−1191.340	104.400	−1789.509	−1290.881	−1073.579	62.309
	1000.00	180.110	683.576	561.195	−1173.359	122.381	−1856.935	−1312.014	−1047.918	54.738
	1100.00	180.591	700.766	573.114	−1155.323	140.417	−1926.165	−1311.588	−1021.529	48.508
	1200.00	180.959	716.496	584.416	−1137.245	158.495	−1997.040	−1311.152	−995.179	43.319
	1300.00	181.247	730.992	595.141	−1119.134	176.606	−2069.424	−1310.709	−968.866	38.930
	1400.00	181.475	744.433	605.331	−1100.997	194.743	−2143.203	−1310.266	−942.587	35.168
	1500.00	181.658	756.960	615.026	−1082.840	212.900	−2218.280	−1309.825	−916.340	31.910
	1600.00	181.807	768.688	624.268	−1064.667	231.073	−2294.568	−1309.389	−890.122	29.059
	1700.00	181.929	779.714	633.091	−1046.480	249.260	−2371.994	−1308.961	−863.931	26.545
	1800.00	182.031	790.116	641.528	−1028.282	267.458	−2450.490	−1308.543	−837.764	24.311
	1900.00	182.115	799.960	649.610	−1010.074	285.666	−2529.999	−1308.138	−811.621	22.313
	2000.00	182.186	809.303	657.363	−991.859	303.881	−2610.466	−1307.747	−785.499	20.515

References

Phase	H / S	C_p
GAS	Ja2	Ja1

AlCl3*6H2O ALUMINIUM CHLORIDE HEXAHYDRATE 241.431

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	296.228	317.997	317.997	−2691.601	0.000	−2786.412	−2691.601	−2260.931	396.106
	300.00	296.368	319.829	318.002	−2691.053	0.548	−2787.002	−2691.675	−2258.258	393.198
	400.00	303.917	406.123	329.717	−2661.039	30.562	−2823.488	−2695.717	−2113.177	275.953

References

Phase	H / S	C_p
SOL	Nb1	Tk1,e

85.915

ALUMINIUM COBALT

AlCo

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	46.419	54.392	54.392	−110.458	0.000	−126.675	−110.458	−109.288	19.147
	300.00	46.442	54.679	54.393	−110.372	0.086	−126.776	−110.463	−109.281	19.027
	400.00	47.698	68.212	56.230	−105.665	4.793	−132.950	−110.827	−108.837	14.213
	500.00	48.953	78.990	59.739	−100.833	9.625	−140.328	−111.374	−108.280	11.312
	600.00	50.208	88.026	63.720	−95.875	14.583	−148.690	−112.065	−107.598	9.367
	700.00	51.463	95.860	67.764	−90.791	19.667	−157.893	−112.884	−106.791	7.969
	800.00	52.718	102.814	71.719	−85.582	24.876	−167.833	−114.270	−105.795	6.908
	900.00	53.974	109.096	75.528	−80.247	30.211	−178.433	−115.472	−104.667	6.075
	1000.00	55.229	114.847	79.176	−74.787	35.671	−189.634	−127.532	−102.629	5.361
	1100.00	56.484	120.170	82.664	−69.202	41.256	−201.389	−128.949	−100.071	4.752
	1200.00	57.739	125.139	85.999	−63.490	46.968	−213.657	−130.560	−97.377	4.239
	1300.00	58.994	129.810	89.191	−57.654	52.804	−226.406	−132.482	−94.536	3.799
	1400.00	60.250	134.228	92.252	−51.692	58.766	−239.610	−134.844	−91.531	3.415
	1500.00	61.505	138.427	95.191	−45.604	64.854	−253.245	−136.111	−88.390	3.078

References

Phase	H / S	C_p	Remarks
SOL	W1/e	e	Hu1 MPT= 1918.

252.774

5−ALUMINIUM 2−COBALT

Al5Co2

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	164.741	193.719	193.719	−292.880	0.000	−350.637	−292.880	−290.573	50.907
	300.00	164.850	194.739	193.722	−292.575	0.305	−350.997	−292.892	−290.559	50.591
	400.00	170.707	242.965	200.258	−275.797	17.083	−372.983	−293.776	−289.661	37.826
	500.00	176.565	281.687	212.794	−258.434	34.446	−399.277	−295.094	−288.487	30.138
	600.00	182.422	314.396	227.070	−240.484	52.396	−429.122	−296.708	−287.019	24.987
	700.00	188.280	342.956	241.627	−221.949	70.931	−462.019	−298.579	−285.260	21.286
	800.00	194.138	368.480	255.915	−202.828	90.052	−497.612	−301.654	−283.086	18.484
	900.00	199.995	391.684	269.731	−183.122	109.758	−535.638	−304.586	−280.599	16.286
	1000.00	205.853	413.059	283.008	−162.829	130.051	−575.888	−361.169	−273.942	14.309
	1100.00	211.710	432.954	295.746	−141.951	150.929	−618.200	−363.820	−265.091	12.588
	1200.00	217.568	451.626	307.965	−120.487	172.393	−662.438	−366.525	−255.997	11.143
	1300.00	223.426	469.272	319.701	−98.438	194.442	−708.491	−369.517	−246.668	9.911
	1400.00	229.283	486.044	330.988	−75.802	217.078	−756.264	−373.055	−237.088	8.846
	1443.00	231.802	493.018	335.713	−65.889	226.991	−777.314	−373.672	−232.902	8.431

References

Phase	H / S	C_p	Remarks
SOL	W1/e	e	Hu1 DPT= 1443. (LIQ + AlCo)

AlF[g] ALUMINIUM MONOFLUORIDE (GAS) 45.980

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	31.934	215.160	215.160	−265.684	0.000	−329.834	−265.684	−291.172	51.012
	300.00	31.966	215.358	215.161	−265.625	0.059	−330.232	−265.699	−291.330	50.725
	400.00	33.591	224.785	216.435	−262.344	3.340	−352.258	−266.531	−299.750	39.143
	500.00	34.740	232.413	218.892	−258.923	6.761	−375.130	−267.433	−307.952	32.172
	600.00	35.509	238.820	221.694	−255.408	10.276	−398.700	−268.410	−315.965	27.507
	700.00	36.040	244.335	224.543	−251.829	13.855	−422.864	−269.473	−323.809	24.163
	800.00	36.422	249.174	227.326	−248.205	17.479	−447.545	−270.654	−331.492	21.644
	900.00	36.710	253.481	229.997	−244.548	21.136	−472.681	−272.009	−339.018	19.676
	1000.00	36.933	257.361	232.543	−240.866	24.818	−498.227	−284.111	−345.623	18.053
	1100.00	37.113	260.890	234.962	−237.163	28.521	−524.142	−285.437	−351.710	16.701
	1200.00	37.261	264.126	237.259	−233.444	32.240	−550.395	−286.757	−357.676	15.569
	1300.00	37.387	267.113	239.442	−229.711	35.973	−576.959	−288.072	−363.533	14.607
	1400.00	37.496	269.888	241.519	−225.967	39.717	−603.811	−289.384	−369.288	13.778
	1500.00	37.592	272.478	243.498	−222.213	43.471	−630.930	−290.693	−374.950	13.057
	1600.00	37.678	274.907	245.386	−218.449	47.235	−658.301	−291.999	−380.524	12.423
	1700.00	37.756	277.194	247.190	−214.677	51.007	−685.907	−293.303	−386.017	11.861
	1800.00	37.829	279.354	248.918	−210.898	54.786	−713.736	−294.605	−391.433	11.359
	1900.00	37.896	281.401	250.574	−207.112	58.572	−741.774	−295.905	−396.777	10.908
	2000.00	37.959	283.347	252.164	−203.319	62.365	−770.012	−297.203	−402.053	10.501

References

Phase	H / S	C_p
GAS	Ja2	Ja1

64.978

ALUMINIUM DIFLUORIDE (GAS) **AlF2**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	45.859	264.100	264.100	−695.000	0.000	−773.741	−695.000	−704.848	123.486
	300.00	45.935	264.384	264.101	−694.915	0.085	−774.230	−695.018	−704.909	122.736
	400.00	49.552	278.122	265.949	−690.131	4.869	−801.380	−695.954	−708.063	92.464
	500.00	51.973	289.459	269.551	−685.046	9.954	−829.775	−696.873	−710.984	74.276
	600.00	53.556	299.084	273.691	−679.764	15.236	−859.215	−697.819	−713.719	62.135
	700.00	54.631	307.426	277.928	−674.352	20.648	−889.550	−698.824	−716.290	53.450
	800.00	55.395	314.773	282.084	−668.848	26.152	−920.667	−699.929	−718.711	46.927
	900.00	55.940	321.331	286.087	−663.280	31.720	−952.478	−701.197	−720.985	41.845
	1000.00	56.342	327.247	289.912	−657.665	37.335	−984.912	−713.207	−722.348	37.732
	1100.00	56.648	332.632	293.554	−652.015	42.985	−1017.910	−714.438	−723.203	34.342
	1200.00	56.885	337.571	297.019	−646.338	48.662	−1051.423	−715.664	−723.945	31.513
	1300.00	57.072	342.132	300.316	−640.639	54.361	−1085.411	−716.887	−724.586	29.114
	1400.00	57.223	346.367	303.456	−634.924	60.076	−1119.839	−718.110	−725.132	27.055
	1500.00	57.346	350.320	306.450	−629.196	65.804	−1154.675	−719.333	−725.591	25.267
	1600.00	57.448	354.024	309.309	−623.456	71.544	−1189.894	−720.557	−725.969	23.700
	1700.00	57.533	357.510	312.043	−617.707	77.293	−1225.473	−721.785	−726.269	22.316
	1800.00	57.604	360.800	314.661	−611.950	83.050	−1261.390	−723.015	−726.498	21.082
	1900.00	57.665	363.916	317.172	−606.186	88.814	−1297.627	−724.249	−726.657	19.977
	2000.00	57.717	366.875	319.584	−600.417	94.583	−1334.168	−725.487	−726.752	18.981

References

Phase	H / S	C_p
GAS	Ja2	Ja1

AlF3 ALUMINIUM FLUORIDE 83.977

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	75.105	66.480	66.480	−1510.400	0.000	−1530.221	−1510.400	−1431.096	250.722
	300.00	75.398	66.945	66.481	−1510.261	0.139	−1530.344	−1510.393	−1430.604	249.090
	400.00	86.289	90.316	69.594	−1502.111	8.289	−1538.238	−1509.570	−1404.112	183.358
	500.00	92.279	110.267	75.785	−1493.159	17.241	−1548.293	−1508.304	−1377.889	143.947
	600.00	97.294	127.470	82.997	−1483.716	26.684	−1560.198	−1506.825	−1351.940	117.697
	700.00	105.357	143.046	90.476	−1473.601	36.799	−1573.733	−1504.902	−1326.270	98.967
	728.00	107.943	147.228	92.579	−1470.615	39.785	−1577.797	−1504.249	−1319.137	94.649
			0.774		0.563					
SOL−B	728.00	97.574	148.002	92.579	−1470.052	40.348	−1577.797	−1503.686	−1319.137	94.649
	800.00	98.516	157.249	97.989	−1462.992	47.408	−1588.791	−1502.705	−1300.933	84.942
	900.00	99.715	168.922	105.233	−1453.080	57.320	−1605.110	−1501.452	−1275.788	74.045
	1000.00	100.831	179.487	112.139	−1443.052	67.348	−1622.539	−1510.890	−1250.016	65.294
	1100.00	101.893	189.147	118.707	−1432.915	77.485	−1640.977	−1509.488	−1223.996	58.123
	1200.00	102.917	198.057	124.953	−1422.675	87.725	−1660.343	−1508.014	−1198.107	52.152
	1300.00	103.915	206.334	130.898	−1412.333	98.067	−1680.568	−1506.467	−1172.343	47.105
	1400.00	104.894	214.071	136.566	−1401.892	108.508	−1701.592	−1504.845	−1146.702	42.784
	1500.00	105.859	221.341	141.977	−1391.354	119.046	−1723.366	−1503.148	−1121.179	39.043
	1548.00	106.319	224.683	144.490	−1386.262	124.138	−1734.071	−1502.306	−1108.969	37.420

References

Phase	H / S	C_p	Remarks	
SOL−A	Ja2,Co1	Ja1		
SOL−B	Ja2	Ja1	Ja1	BPT= 1548., L= 273.6 kJ, GAS(AlF3 + Al2F6)

83.977 ALUMINIUM FLUORIDE (GAS) **AlF3**[g]

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	62.546	276.690	276.690	–1209.320	0.000	–1291.815	–1209.320	–1192.690	208.954
	300.00	62.664	277.077	276.691	–1209.204	0.116	–1292.327	–1209.336	–1192.587	207.648
	400.00	68.557	295.949	279.224	–1202.630	6.690	–1321.010	–1210.089	–1186.884	154.991
	500.00	72.628	311.716	284.189	–1195.556	13.764	–1351.415	–1210.701	–1181.011	123.379
	600.00	75.294	325.210	289.929	–1188.151	21.169	–1383.277	–1211.260	–1175.020	102.295
	700.00	77.090	336.960	295.827	–1180.526	28.794	–1416.399	–1211.828	–1168.935	87.227
	800.00	78.346	347.341	301.630	–1172.751	36.569	–1450.624	–1212.463	–1162.765	75.921
	900.00	79.255	356.624	307.234	–1164.869	44.451	–1485.830	–1213.241	–1156.508	67.122
	1000.00	79.932	365.011	312.599	–1156.908	52.412	–1521.919	–1224.746	–1149.396	60.038
	1100.00	80.450	372.655	317.716	–1148.888	60.432	–1558.808	–1225.460	–1141.827	54.221
	1200.00	80.855	379.673	322.591	–1140.821	68.499	–1596.429	–1226.161	–1134.193	49.370
	1300.00	81.178	386.158	327.234	–1132.719	76.601	–1634.725	–1226.853	–1126.501	45.263
	1400.00	81.439	392.184	331.661	–1124.588	84.732	–1673.645	–1227.541	–1118.755	41.741
	1500.00	81.654	397.810	335.885	–1116.433	92.887	–1713.148	–1228.226	–1110.961	38.687
	1600.00	81.833	403.086	339.922	–1108.258	101.062	–1753.196	–1228.911	–1103.121	36.013
	1700.00	81.984	408.052	343.785	–1100.067	109.253	–1793.755	–1229.598	–1095.238	33.653
	1800.00	82.113	412.741	347.487	–1091.862	117.458	–1834.797	–1230.286	–1087.315	31.553
	1900.00	82.223	417.184	351.040	–1083.645	125.675	–1876.295	–1230.978	–1079.353	29.673
	2000.00	82.319	421.404	354.453	–1075.418	133.902	–1918.226	–1231.675	–1071.355	27.981

References

Phase	H / S	C_p
GAS	Ja2	Ja1

Al2F6[g] DIALUMINIUM HEXAFLUORIDE (GAS) 167.953

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	133.761	387.120	387.120	−2633.620	0.000	−2749.040	−2633.620	−2550.789	446.888
	300.00	134.089	387.948	387.123	−2633.372	0.248	−2749.757	−2633.636	−2550.275	444.042
	400.00	149.198	428.730	392.580	−2619.160	14.460	−2790.652	−2634.078	−2522.402	329.392
	500.00	158.956	463.154	403.344	−2603.715	29.905	−2835.292	−2634.004	−2494.484	260.597
	600.00	165.190	492.727	415.836	−2587.485	46.135	−2883.121	−2633.704	−2466.606	214.737
	700.00	169.334	518.523	428.703	−2570.746	62.874	−2933.712	−2633.349	−2438.785	181.984
	800.00	172.205	541.332	441.383	−2553.661	79.959	−2986.727	−2633.086	−2411.010	157.423
	900.00	174.269	561.741	453.643	−2536.332	97.288	−3041.898	−2633.076	−2383.255	138.321
	1000.00	175.799	580.185	465.389	−2518.825	114.795	−3099.009	−2654.500	−2353.964	122.958
	1100.00	176.964	596.997	476.601	−2501.184	132.436	−3157.881	−2654.329	−2323.919	110.354
	1200.00	177.869	612.436	487.286	−2483.440	150.180	−3218.363	−2654.119	−2293.891	99.850
	1300.00	178.588	626.702	497.469	−2465.616	168.004	−3280.329	−2653.885	−2263.881	90.964
	1400.00	179.166	639.959	507.179	−2447.728	185.892	−3343.670	−2653.634	−2233.890	83.347
	1500.00	179.640	652.337	516.448	−2429.786	203.834	−3408.292	−2653.373	−2203.917	76.747
	1600.00	180.032	663.943	525.307	−2411.802	221.818	−3474.112	−2653.108	−2173.962	70.973
	1700.00	180.360	674.868	533.787	−2393.782	239.838	−3541.058	−2652.843	−2144.024	65.878
	1800.00	180.638	685.185	541.914	−2375.732	257.888	−3609.065	−2652.580	−2114.101	61.350
	1900.00	180.875	694.958	549.714	−2357.656	275.964	−3678.077	−2652.322	−2084.192	57.298
	2000.00	181.079	704.241	557.210	−2339.558	294.062	−3748.040	−2652.071	−2054.297	53.653

References

Phase	H / S	C_p
GAS	Ja2	Ja1

AlH3 ALUMINIUM HYDRIDE (HEXAGONAL) 30.005

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	40.314	30.041	30.041	−11.401	0.000	−20.358	−11.401	46.516	−8.149
	300.00	40.455	30.291	30.042	−11.326	0.075	−20.414	−11.451	46.875	−8.162
	400.00	48.101	42.976	31.720	−6.898	4.503	−24.089	−13.889	66.701	−8.710

References

Phase	H / S	C_p
SOL	Pa3	Pa3

407.695 ALUMINIUM IODIDE **AlI3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	98.893	190.100	190.100	−302.900	0.000	−359.578	−302.900	−299.207	52.420
	300.00	99.069	190.712	190.102	−302.717	0.183	−359.931	−302.913	−299.184	52.092
	400.00	108.550	220.511	194.101	−292.336	10.564	−380.540	−327.497	−297.013	38.786
	464.15	114.632	237.098	198.915	−285.177	17.723	−395.227	−392.297	−291.057	32.755
			34.256		15.900					
LIQ	464.15	121.336	271.354	198.915	−269.277	33.623	−395.227	−376.397	−291.057	32.755
	500.00	121.336	280.382	204.437	−264.928	37.972	−405.118	−375.020	−284.518	29.723
	600.00	121.336	302.504	218.994	−252.794	50.106	−434.296	−371.268	−266.772	23.225
	700.00	121.336	321.208	232.294	−240.660	62.240	−465.506	−367.645	−249.644	18.629

References

Phase	H / S	C_p	Remarks
SOL	Ja2	Ja1	
LIQ	Ja2	Ja1	Ja1 NBPT= 658.(approx.), GAS (Al2I6 + AlI3)

407.695 ALUMINIUM IODIDE (GAS) **AlI3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	76.422	373.620	373.620	−193.300	0.000	−304.695	−193.300	−244.323	42.804
	300.00	76.501	374.093	373.621	−193.159	0.141	−305.386	−193.355	−244.639	42.596
	400.00	79.288	396.540	376.663	−185.349	7.951	−343.965	−220.510	−260.438	34.010
	500.00	80.588	414.388	382.485	−177.348	15.952	−384.542	−287.441	−263.942	27.574
	600.00	81.304	429.150	389.068	−169.251	24.049	−426.741	−287.725	−259.216	22.567
	700.00	81.743	441.718	395.714	−161.097	32.203	−470.299	−288.082	−254.438	18.986
	800.00	82.035	452.654	402.162	−152.907	40.393	−515.030	−288.552	−249.601	16.297
	900.00	82.242	462.329	408.320	−144.693	48.607	−560.788	−289.197	−244.696	14.202
	1000.00	82.396	471.002	414.162	−136.460	56.840	−607.462	−300.591	−238.949	12.481
	1100.00	82.514	478.861	419.692	−128.215	65.085	−654.962	−301.212	−232.754	11.053
	1200.00	82.610	486.045	424.927	−119.958	73.342	−703.212	−301.832	−226.504	9.859
	1300.00	82.688	492.660	429.886	−111.693	81.607	−752.152	−302.453	−220.201	8.848
	1400.00	82.755	498.791	434.591	−103.421	89.879	−801.728	−303.077	−213.850	7.979
	1500.00	82.812	504.502	439.064	−95.143	98.157	−851.896	−303.703	−207.455	7.224
	1600.00	82.863	509.848	443.323	−86.859	106.441	−902.616	−304.334	−201.018	6.563
	1700.00	82.908	514.873	447.385	−78.570	114.730	−953.855	−304.968	−194.542	5.978
	1800.00	82.950	519.613	451.267	−70.277	123.023	−1005.581	−305.607	−188.028	5.456
	1900.00	82.988	524.099	454.984	−61.980	131.320	−1057.769	−306.251	−181.478	4.989
	2000.00	83.023	528.357	458.547	−53.680	139.620	−1110.394	−306.900	−174.894	4.568

References

Phase	H / S	C_p
GAS	Ja2	Ja1

Al2I6[g] DIALUMINIUM HEXAIODIDE (GAS) 815.390

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	171.003	597.380	597.380	−489.530	0.000	−667.639	−489.530	−546.895	95.814
	300.00	171.145	598.438	597.383	−489.214	0.316	−668.745	−489.606	−547.251	95.285
	400.00	176.138	648.460	604.169	−471.814	17.716	−731.198	−542.136	−564.142	73.669
	500.00	178.463	688.042	617.124	−454.071	35.459	−798.092	−674.256	−556.891	58.178
	600.00	179.738	720.703	631.745	−436.155	53.375	−868.577	−673.104	−533.528	46.448
	700.00	180.518	748.473	646.486	−418.140	71.390	−942.070	−672.110	−510.347	38.083
	800.00	181.033	772.613	660.776	−400.061	89.469	−1018.151	−671.351	−487.293	31.817
	900.00	181.394	793.958	674.411	−381.938	107.592	−1096.500	−670.946	−464.315	26.948
	1000.00	181.660	813.084	687.339	−363.785	125.745	−1176.869	−692.046	−439.841	22.975
	1100.00	181.864	830.408	699.570	−345.608	143.922	−1259.057	−691.603	−414.642	19.690
	1200.00	182.025	846.239	711.142	−327.414	162.116	−1342.901	−691.161	−389.484	16.954
	1300.00	182.156	860.814	722.102	−309.204	180.326	−1428.263	−690.725	−364.361	14.640
	1400.00	182.266	874.318	732.498	−290.983	198.547	−1515.028	−690.295	−339.273	12.658
	1500.00	182.360	886.896	742.377	−272.752	216.778	−1603.096	−689.873	−314.214	10.942
	1600.00	182.441	898.668	751.781	−254.511	235.019	−1692.380	−689.461	−289.184	9.441
	1700.00	182.513	909.731	760.750	−236.264	253.266	−1782.806	−689.059	−264.179	8.117
	1800.00	182.577	920.165	769.320	−218.009	271.521	−1874.305	−688.669	−239.197	6.941
	1900.00	182.636	930.038	777.521	−199.748	289.782	−1966.820	−688.289	−214.237	5.890
	2000.00	182.690	939.407	785.383	−181.482	308.048	−2060.296	−687.922	−189.297	4.944

References

Phase	H / S	C_p
GAS	Ja2	Ja1

192.869

2–ALUMINIUM LANTHANUM

Al2La

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	73.721	98.742	98.742	–150.624	0.000	–180.064	–150.624	–146.238	25.620
	300.00	73.747	99.199	98.744	–150.488	0.136	–180.247	–150.628	–146.211	25.458
	400.00	75.170	120.609	101.653	–143.042	7.582	–191.285	–150.921	–144.699	18.896
	500.00	76.592	137.536	107.195	–135.454	15.170	–204.221	–151.364	–143.095	14.949
	600.00	78.015	151.626	113.458	–127.723	22.901	–218.699	–152.265	–141.359	12.306
	700.00	79.437	163.759	119.797	–119.851	30.773	–234.482	–152.962	–139.489	10.409
	800.00	80.860	174.459	125.974	–111.836	38.788	–251.403	–153.914	–137.503	8.978
	900.00	82.283	184.065	131.903	–103.679	46.945	–269.337	–155.231	–135.377	7.857
	1000.00	83.705	192.808	137.563	–95.379	55.245	–288.187	–178.059	–131.565	6.872
	1100.00	85.128	200.853	142.956	–86.938	63.686	–307.875	–179.346	–126.853	6.024
	1200.00	86.550	208.321	148.095	–78.354	72.270	–328.338	–190.185	–121.798	5.302
	1300.00	87.973	215.304	153.000	–69.628	80.996	–349.523	–191.239	–116.055	4.663
	1400.00	89.395	221.876	157.687	–60.759	89.865	–371.386	–192.151	–110.237	4.113
	1500.00	90.818	228.092	162.175	–51.749	98.875	–393.887	–192.921	–104.358	3.634
	1600.00	92.240	233.999	166.481	–42.596	108.028	–416.994	–193.549	–98.433	3.213
	1678.00	93.350	238.416	169.723	–35.358	115.266	–435.419	–193.940	–93.786	2.919

References

Phase	H / S	C_p	Remarks	
SOL	Ku1	Nb1,e	Hu1	MPT= 1678.

33.923

ALUMINIUM LITHIUM

AlLi

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	48.922	46.861	46.861	–48.953	0.000	–62.925	–48.953	–45.824	8.028
	300.00	48.953	47.164	46.862	–48.862	0.091	–63.012	–48.953	–45.805	7.975
	400.00	50.626	61.476	48.802	–43.884	5.069	–68.474	–49.095	–44.741	5.843
	500.00	52.300	72.952	52.521	–38.737	10.216	–75.213	–52.525	–43.303	4.524
	600.00	53.974	82.636	56.753	–33.424	15.529	–83.005	–52.944	–41.417	3.606
	700.00	55.647	91.081	61.066	–27.942	21.011	–91.699	–53.256	–39.470	2.945
	800.00	57.321	98.621	65.298	–22.294	26.659	–101.191	–53.512	–37.483	2.447
	900.00	58.994	105.469	69.386	–16.478	32.475	–111.401	–53.776	–35.464	2.058
	993.00	60.551	111.346	73.044	–10.919	38.034	–121.486	–64.625	–32.879	1.730

References

Phase	H / S	C_p	Remarks	
SOL	Ku1	e	Ku1	MPT= 993.

AlN — ALUMINIUM NITRIDE — 40.988

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL	298.15	30.140	20.150	20.150	−317.984	0.000	−323.992	−317.984	−286.997	50.281
	300.00	30.291	20.337	20.151	−317.928	0.056	−324.029	−318.000	−286.805	49.937
	400.00	36.402	29.967	21.422	−314.566	3.418	−326.553	−318.603	−276.303	36.082
	500.00	40.448	38.547	24.006	−310.714	7.270	−329.987	−318.862	−265.693	27.757
	600.00	43.683	46.215	27.080	−306.503	11.481	−334.232	−318.897	−255.053	22.204
	700.00	45.719	53.113	30.315	−302.025	15.959	−339.205	−318.808	−244.418	18.239
	800.00	47.083	59.313	33.559	−297.381	20.603	−344.831	−318.721	−233.798	15.265
	900.00	48.054	64.917	36.737	−292.622	25.362	−351.047	−318.738	−223.183	12.953
	1000.00	48.783	70.020	39.814	−287.778	30.206	−357.798	−329.459	−211.799	11.063
	1100.00	49.131	74.687	42.775	−282.881	35.103	−365.037	−329.386	−200.036	9.499
	1200.00	49.400	78.974	45.616	−277.954	40.030	−372.723	−329.308	−188.281	8.196
	1300.00	49.617	82.937	48.336	−273.003	44.981	−380.821	−329.229	−176.532	7.093
	1400.00	49.798	86.621	50.941	−268.032	49.952	−389.301	−329.149	−164.789	6.148
	1500.00	49.952	90.062	53.435	−263.044	54.940	−398.137	−329.071	−153.052	5.330
	1600.00	50.084	93.290	55.826	−258.042	59.942	−407.306	−328.993	−141.319	4.614
	1700.00	50.201	96.330	58.120	−253.028	64.956	−416.788	−328.916	−129.592	3.982
	1800.00	50.305	99.202	60.324	−248.003	69.981	−426.566	−328.840	−117.869	3.420
	1900.00	50.398	101.924	62.442	−242.968	75.016	−436.624	−328.765	−106.151	2.918
	2000.00	50.484	104.512	64.481	−237.923	80.061	−446.947	−328.690	−94.436	2.466

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1	Ja1	DPT= 2790.

AlNi — ALUMINIUM NICKEL — 85.672

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL	298.15	45.957	54.099	54.099	−118.407	0.000	−134.537	−118.407	−117.200	20.533
	300.00	45.982	54.383	54.100	−118.322	0.085	−134.637	−118.415	−117.192	20.405
	400.00	47.363	67.801	55.920	−113.655	4.752	−140.775	−118.987	−116.705	15.240
	500.00	48.744	78.518	59.403	−108.849	9.558	−148.108	−119.779	−116.048	12.123
	600.00	50.124	87.527	63.359	−103.906	14.501	−156.422	−120.862	−115.206	10.030
	700.00	51.505	95.357	67.382	−98.825	19.582	−165.575	−121.965	−114.166	8.519
	800.00	52.886	102.325	71.322	−93.605	24.802	−175.465	−122.840	−112.993	7.378
	900.00	54.266	108.634	75.123	−88.247	30.160	−186.018	−123.822	−111.705	6.483
	1000.00	55.647	114.423	78.767	−82.752	35.655	−197.174	−135.518	−109.540	5.722
	1100.00	57.028	119.791	82.256	−77.118	41.289	−208.888	−136.404	−106.899	5.076
	1200.00	58.409	124.812	85.595	−71.346	47.061	−221.121	−137.248	−104.179	4.535
	1300.00	59.789	129.542	88.795	−65.436	52.971	−233.841	−138.045	−101.390	4.074

References

Phase	H / S	C_p	Remarks	
SOL	Ku1	Hu1	Tk1	MPT= 1911.

203.052

ALUMINIUM 3–NICKEL

AlNi3

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	98.097	113.805	113.805	–153.134	0.000	–187.065	–153.134	–151.914	26.615
	300.00	98.157	114.412	113.807	–152.952	0.182	–187.276	–153.142	–151.906	26.449
	400.00	101.378	143.091	117.695	–142.976	10.158	–200.212	–153.869	–151.400	19.771
	500.00	104.600	166.059	125.145	–132.677	20.457	–215.706	–155.080	–150.654	15.739
	600.00	107.822	185.415	133.617	–122.056	31.078	–233.304	–157.029	–149.602	13.024
	700.00	111.043	202.277	142.246	–111.112	42.022	–252.707	–158.904	–148.185	11.058
	800.00	114.265	217.315	150.707	–99.847	53.287	–273.699	–159.918	–146.583	9.571
	900.00	117.487	230.960	158.877	–88.259	64.875	–296.123	–160.972	–144.855	8.407
	1000.00	120.708	243.505	166.721	–76.350	76.784	–319.855	–172.750	–142.241	7.430
	1100.00	123.930	255.161	174.237	–64.118	89.016	–344.795	–173.726	–139.142	6.607
	1200.00	127.152	266.082	181.440	–51.564	101.570	–370.862	–174.670	–135.956	5.918
	1300.00	130.373	276.387	188.351	–38.687	114.447	–397.991	–175.566	–132.693	5.332
	1400.00	133.595	286.167	194.992	–25.489	127.645	–426.122	–176.341	–129.365	4.827
	1500.00	136.817	295.494	201.383	–11.968	141.166	–455.209	–176.853	–125.990	4.387
	1600.00	140.038	304.426	207.546	1.874	155.008	–485.208	–177.043	–122.591	4.002
	1668.00	142.229	310.300	211.616	11.471	164.605	–506.110	–176.987	–120.277	3.767

References

Phase	H / S	C_p	Remarks
SOL	Ku1	Ku1,e	Hu1 DPT= 1668. (peritec.)

139.635

3–ALUMINIUM NICKEL

Al3Ni

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	94.577	110.667	110.667	–150.624	0.000	–183.619	–150.624	–149.422	26.178
	300.00	94.642	111.252	110.669	–150.449	0.175	–183.825	–150.632	–149.414	26.015
	400.00	98.157	138.960	114.423	–140.809	9.815	–196.393	–151.245	–148.925	19.448
	500.00	101.671	161.241	121.628	–130.818	19.806	–211.438	–152.132	–148.248	15.487
	600.00	105.186	180.088	129.840	–120.475	30.149	–228.528	–153.326	–147.365	12.829
	700.00	108.700	196.567	138.219	–109.780	40.844	–247.377	–154.550	–146.265	10.914
	800.00	112.215	211.311	146.449	–98.735	51.889	–267.784	–155.602	–145.012	9.468
	900.00	115.729	224.731	154.413	–87.338	63.286	–289.595	–156.922	–143.613	8.335
	1000.00	119.244	237.106	162.071	–75.589	75.035	–312.695	–190.255	–139.770	7.301
	1100.00	122.759	248.636	169.422	–63.489	87.135	–336.988	–191.024	–134.682	6.396
	1127.00	123.707	251.624	171.356	–60.161	90.463	–343.742	–191.188	–133.298	6.178

References

Phase	H / S	C_p	Remarks
SOL	Ku1	e	Hu1 DPT= 1127. (peritec.)

Al3Ni2 — 3–ALUMINIUM 2–NICKEL — 198.325

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	116.294	136.398	136.398	–282.420	0.000	–323.087	–282.420	–279.983	49.052
	300.00	116.357	137.118	136.401	–282.205	0.215	–323.340	–282.436	–279.968	48.747
	400.00	119.788	171.062	141.006	–270.398	12.022	–338.822	–283.614	–278.984	36.432
	500.00	123.219	198.160	149.815	–258.247	24.173	–357.327	–285.299	–277.641	29.005
	600.00	126.650	220.929	159.818	–245.754	36.666	–378.311	–287.613	–275.905	24.020
	700.00	130.081	240.710	169.991	–232.917	49.503	–401.414	–290.012	–273.746	20.427
	800.00	133.511	258.303	179.951	–219.738	62.682	–426.380	–292.023	–271.287	17.713
	900.00	136.942	274.227	189.555	–206.215	76.205	–453.019	–294.368	–268.559	15.587
	1000.00	140.373	288.833	198.762	–192.349	90.071	–481.182	–328.832	–263.268	13.752
	1100.00	143.804	302.373	207.573	–178.140	104.280	–510.750	–330.837	–256.613	12.186
	1200.00	147.235	315.032	216.006	–163.588	118.832	–541.627	–332.691	–249.782	10.873
	1300.00	150.666	326.953	224.086	–148.693	133.727	–573.732	–334.386	–242.803	9.756
	1400.00	154.097	338.244	231.841	–133.455	148.965	–606.997	–335.871	–235.701	8.794
	1406.00	154.303	338.903	232.296	–132.530	149.890	–609.028	–335.952	–235.272	8.741

References

Phase	H / S	C_p	Remarks
SOL	Hu1/e	e	Hu1 DPT= 1406. (peritec.)

AlO[g] — ALUMINIUM MONOXIDE (GAS) — 42.981

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	30.885	218.385	218.385	68.618	0.000	3.507	68.618	42.519	–7.449
	300.00	30.909	218.576	218.385	68.675	0.057	3.102	68.603	42.357	–7.375
	400.00	32.483	227.681	219.616	71.844	3.226	–19.228	67.780	33.732	–4.405
	500.00	33.762	235.075	221.991	75.160	6.542	–42.377	66.925	25.318	–2.645
	600.00	34.679	241.316	224.705	78.584	9.966	–66.205	66.015	17.081	–1.487
	700.00	35.388	246.717	227.472	82.089	13.471	–90.613	65.025	9.003	–0.672
	800.00	36.002	251.483	230.182	85.659	17.041	–115.527	63.924	1.073	–0.070
	900.00	36.591	255.757	232.790	89.288	20.670	–140.893	62.663	–6.710	0.389
	1000.00	37.199	259.643	235.284	92.978	24.360	–166.666	50.676	–13.583	0.710
	1100.00	37.900	263.222	237.663	96.732	28.114	–192.811	49.502	–19.952	0.947
	1200.00	38.667	266.552	239.933	100.560	31.942	–219.302	48.380	–26.216	1.141
	1300.00	39.502	269.679	242.102	104.468	35.850	–246.115	47.322	–32.389	1.301
	1400.00	40.379	272.639	244.179	108.462	39.844	–273.232	46.334	–38.483	1.436
	1500.00	41.272	275.455	246.171	112.544	43.926	–300.638	45.421	–44.509	1.550
	1600.00	42.151	278.147	248.086	116.716	48.098	–328.319	44.584	–50.477	1.648
	1700.00	42.994	280.728	249.930	120.973	52.355	–356.264	43.821	–56.394	1.733
	1800.00	43.780	283.208	251.711	125.313	56.695	–384.461	43.128	–62.269	1.807
	1900.00	44.494	285.594	253.432	129.727	61.109	–412.902	42.497	–68.107	1.872
	2000.00	45.120	287.893	255.098	134.209	65.591	–441.577	41.923	–73.913	1.930

References

Phase	H / S	C_p
GAS	Ja1	Ja1

58.980

ALUMINIUM DIOXIDE (GAS) **AlO2**[g]

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	48.891	245.292	245.292	–187.862	0.000	–260.996	–187.862	–191.401	33.533
	300.00	48.981	245.595	245.293	–187.771	0.091	–261.450	–187.871	–191.423	33.330
	400.00	53.120	260.290	247.268	–182.653	5.209	–286.769	–188.230	–192.547	25.144
	500.00	55.794	272.453	251.124	–177.197	10.665	–313.424	–188.474	–193.597	20.225
	600.00	57.503	282.788	255.562	–171.526	16.336	–341.199	–188.718	–194.600	16.941
	700.00	58.640	291.743	260.106	–165.716	22.146	–369.936	–189.029	–195.557	14.593
	800.00	59.427	299.628	264.563	–159.810	28.052	–399.512	–189.462	–196.461	12.828
	900.00	59.994	306.662	268.857	–153.837	34.025	–429.833	–190.083	–197.301	11.451
	1000.00	60.414	313.006	272.960	–147.816	40.046	–460.822	–201.469	–197.302	10.306
	1100.00	60.734	318.779	276.867	–141.758	46.104	–492.415	–202.095	–196.855	9.348
	1200.00	60.983	324.075	280.583	–135.672	52.190	–524.562	–202.732	–196.350	8.547
	1300.00	61.180	328.964	284.119	–129.563	58.299	–557.217	–203.381	–195.792	7.867
	1400.00	61.340	333.504	287.486	–123.437	64.425	–590.343	–204.043	–195.184	7.282
	1500.00	61.470	337.741	290.697	–117.296	70.566	–623.908	–204.718	–194.528	6.774
	1600.00	61.579	341.712	293.763	–111.143	76.719	–657.882	–205.408	–193.826	6.328
	1700.00	61.669	345.448	296.694	–104.981	82.881	–692.242	–206.112	–193.080	5.933
	1800.00	61.746	348.975	299.502	–98.810	89.052	–726.965	–206.832	–192.293	5.580
	1900.00	61.812	352.315	302.194	–92.632	95.230	–762.031	–207.568	–191.465	5.264
	2000.00	61.869	355.487	304.780	–86.448	101.414	–797.422	–208.322	–190.598	4.978

References

Phase	H / S	C_p
GAS	Ja1	Ja1

Al2O[g] DIALUMINIUM OXIDE (GAS) 69.962

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	52.361	257.007	257.007	–130.541	0.000	–207.168	–130.541	–159.725	27.983
	300.00	52.415	257.331	257.008	–130.444	0.097	–207.643	–130.561	–159.906	27.842
	400.00	55.162	272.801	259.099	–125.060	5.481	–234.180	–131.676	–169.521	22.137
	500.00	57.103	285.333	263.132	–119.440	11.101	–262.107	–132.868	–178.846	18.684
	600.00	58.393	295.866	267.733	–113.661	16.880	–291.181	–134.178	–187.921	16.360
	700.00	59.275	304.938	272.415	–107.775	22.766	–321.232	–135.653	–196.765	14.683
	800.00	59.901	312.896	276.988	–101.814	28.727	–352.131	–137.365	–205.381	13.410
	900.00	60.360	319.979	281.379	–95.800	34.741	–383.782	–139.431	–213.764	12.407
	1000.00	60.707	326.358	285.563	–89.746	40.795	–416.104	–162.997	–220.376	11.511
	1100.00	60.975	332.157	289.539	–83.662	46.879	–449.034	–165.017	–226.016	10.733
	1200.00	61.186	337.472	293.315	–77.553	52.988	–482.519	–167.032	–231.473	10.076
	1300.00	61.356	342.376	296.903	–71.426	59.115	–516.515	–169.046	–236.761	9.513
	1400.00	61.492	346.928	300.315	–65.283	65.258	–550.983	–171.060	–241.895	9.025
	1500.00	61.603	351.175	303.566	–59.128	71.413	–585.890	–173.075	–246.884	8.597
	1600.00	61.694	355.154	306.667	–52.963	77.578	–621.209	–175.093	–251.739	8.218
	1700.00	61.768	358.896	309.631	–46.790	83.751	–656.913	–177.116	–256.467	7.880
	1800.00	61.828	362.428	312.467	–40.610	89.931	–692.981	–179.143	–261.076	7.576
	1900.00	61.875	365.773	315.185	–34.425	96.116	–729.392	–181.178	–265.573	7.301
	2000.00	61.912	368.947	317.794	–28.235	102.306	–766.130	–183.219	–269.962	7.051

References

Phase	H / S	C_p
GAS	Ja1	Ja1

85.962

DIALUMINIUM DIOXIDE (GAS) **Al2O2**[g]

Phase	T	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	63.812	276.421	276.421	–435.136	0.000	–517.551	–435.136	–439.526	77.003
	300.00	63.955	276.816	276.422	–435.018	0.118	–518.063	–435.162	–439.553	76.533
	400.00	70.213	296.140	279.014	–428.285	6.851	–546.742	–436.414	–440.821	57.565
	500.00	74.065	312.257	284.097	–421.056	14.080	–577.184	–437.526	–441.793	46.154
	600.00	76.479	325.990	289.963	–413.520	21.616	–609.114	–438.659	–442.541	38.527
	700.00	78.066	337.906	295.980	–405.787	29.349	–642.322	–439.915	–443.091	33.064
	800.00	79.158	348.406	301.890	–397.923	37.213	–676.648	–441.392	–443.447	28.954
	900.00	79.938	357.777	307.588	–389.966	45.170	–711.966	–443.217	–443.599	25.746
	1000.00	80.514	366.231	313.037	–381.942	53.194	–748.173	–466.545	–442.008	23.088
	1100.00	80.950	373.926	318.228	–373.868	61.268	–785.186	–468.329	–439.468	20.869
	1200.00	81.288	380.985	323.167	–365.755	69.381	–822.937	–470.115	–436.765	19.012
	1300.00	81.555	387.502	327.869	–357.613	77.523	–861.365	–471.905	–433.913	17.435
	1400.00	81.769	393.554	332.347	–349.446	85.690	–900.422	–473.702	–430.924	16.078
	1500.00	81.943	399.202	336.618	–341.260	93.876	–940.063	–475.507	–427.805	14.897
	1600.00	82.086	404.495	340.696	–333.059	102.077	–980.250	–477.322	–424.566	13.861
	1700.00	82.205	409.475	344.597	–324.844	110.292	–1020.951	–479.149	–421.213	12.942
	1800.00	82.305	414.176	348.333	–316.618	118.518	–1062.136	–480.989	–417.752	12.123
	1900.00	82.390	418.629	351.917	–308.383	126.753	–1103.778	–482.843	–414.188	11.387
	2000.00	82.463	422.857	355.359	–300.141	134.995	–1145.854	–484.712	–410.526	10.722

References

Phase	H / S	C_p
GAS	Ja1	Ja1

Al_2O_3 ALUMINIUM OXIDE (ALPHA,CORUNDUM) 101.961

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL–A	298.15	79.038	50.936	50.936	–1675.692	0.000	–1690.879	–1675.692	–1582.271	277.207
	300.00	79.434	51.426	50.938	–1675.545	0.147	–1690.973	–1675.717	–1581.692	275.397
	400.00	96.117	76.770	54.279	–1666.696	8.996	–1697.404	–1676.337	–1550.221	202.438
	500.00	106.142	99.385	61.086	–1656.543	19.149	–1706.235	–1676.054	–1518.712	158.659
	600.00	112.552	119.343	69.167	–1645.586	30.106	–1717.192	–1675.347	–1487.306	129.481
	700.00	116.956	137.043	77.623	–1634.098	41.594	–1730.028	–1674.475	–1456.034	108.651
	800.00	120.179	152.881	86.058	–1622.234	53.458	–1744.539	–1673.620	–1424.887	93.036
	900.00	122.667	167.185	94.291	–1610.087	65.605	–1760.553	–1672.958	–1393.839	80.896
	1000.00	124.753	180.220	102.241	–1597.714	77.978	–1777.933	–1693.668	–1361.331	71.109
	1100.00	126.614	192.199	109.882	–1585.144	90.548	–1796.562	–1692.711	–1328.142	63.068
	1200.00	128.267	203.288	117.210	–1572.398	103.294	–1816.343	–1691.638	–1295.046	56.372
	1300.00	129.743	213.614	124.233	–1559.496	116.196	–1837.194	–1690.461	–1262.044	50.710
	1400.00	131.069	223.278	130.966	–1546.454	129.238	–1859.044	–1689.189	–1229.136	45.860
	1500.00	132.273	232.363	137.426	–1533.286	142.406	–1881.831	–1687.832	–1196.322	41.660
	1600.00	133.375	240.935	143.630	–1520.003	155.689	–1905.500	–1686.399	–1163.601	37.988
	1700.00	134.262	249.048	149.594	–1506.621	169.071	–1930.003	–1684.904	–1130.972	34.751
	1800.00	135.091	256.746	155.335	–1493.153	182.539	–1955.296	–1683.360	–1098.432	31.876
	1900.00	135.874	264.071	160.867	–1479.604	196.088	–1981.339	–1681.770	–1065.979	29.306
	2000.00	136.619	271.060	166.203	–1465.979	209.713	–2008.099	–1680.139	–1033.611	26.995
	2100.00	137.334	277.743	171.357	–1452.281	223.411	–2035.541	–1678.469	–1001.325	24.907
	2200.00	138.024	284.148	176.339	–1438.513	237.179	–2063.638	–1676.763	–969.120	23.010
	2300.00	138.693	290.298	181.161	–1424.677	251.015	–2092.362	–1675.022	–936.993	21.280
	2327.00	138.871	291.917	182.437	–1420.930	254.762	–2100.222	–1674.546	–928.332	20.838
			47.737		111.085					
LIQ	2327.00	192.464	339.655	182.437	–1309.845	365.847	–2100.222	–1563.461	–928.332	20.838
	2400.00	192.464	345.600	187.310	–1295.795	379.897	–2125.235	–1558.269	–908.489	19.773
	2500.00	192.464	353.457	193.799	–1276.549	399.143	–2160.191	–1551.184	–881.560	18.419
	2600.00	192.464	361.005	200.086	–1257.302	418.390	–2195.916	–1544.132	–854.914	17.175
	2700.00	192.464	368.269	206.182	–1238.056	437.636	–2232.382	–1537.111	–828.539	16.029
	2800.00	192.464	375.268	212.096	–1218.810	456.882	–2269.561	–2117.640	–801.286	14.948
	2900.00	192.464	382.022	217.840	–1199.563	476.129	–2307.428	–2108.488	–754.435	13.589
	3000.00	192.464	388.547	223.422	–1180.317	495.375	–2345.958	–2099.365	–707.899	12.326

References

Phase	H / S	C_p
SOL–A	Ja1,Co1	Ja1
LIQ	Ja1	Ja1

101.961

ALUMINIUM OXIDE (GAMMA) **Al2O3**[C]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL−C	298.15	82.706	52.300	52.300	−1656.864	0.000	−1672.457	−1656.864	−1563.850	273.980
	300.00	83.140	52.813	52.302	−1656.711	0.153	−1672.554	−1656.882	−1563.273	272.190
	400.00	100.762	79.389	55.805	−1647.430	9.434	−1679.186	−1657.072	−1532.004	200.059
	500.00	111.046	103.071	62.940	−1636.798	20.066	−1688.334	−1656.310	−1500.812	156.789
	600.00	117.668	123.942	71.404	−1625.341	31.523	−1699.706	−1655.102	−1469.820	127.959
	700.00	122.310	142.448	80.257	−1613.330	43.534	−1713.044	−1653.707	−1439.049	107.383
	800.00	125.789	159.018	89.084	−1600.917	55.947	−1728.132	−1652.304	−1408.480	91.964
	900.00	128.536	173.998	97.700	−1588.196	68.668	−1744.794	−1651.068	−1378.079	79.982
	1000.00	130.795	187.661	106.023	−1575.226	81.638	−1762.887	−1671.180	−1346.285	70.323
	1100.00	132.710	200.219	114.023	−1562.049	94.815	−1782.290	−1669.616	−1313.870	62.390
	1200.00	134.373	211.839	121.697	−1548.693	108.171	−1802.900	−1667.933	−1281.603	55.787
	1300.00	135.845	222.654	129.051	−1535.180	121.684	−1824.631	−1666.145	−1249.480	50.205
	1400.00	137.166	232.770	136.102	−1521.529	135.335	−1847.407	−1664.263	−1217.499	45.425
	1500.00	138.365	242.275	142.867	−1507.751	149.113	−1871.164	−1662.297	−1185.656	41.288
	1600.00	139.464	251.241	149.363	−1493.859	163.005	−1895.844	−1660.255	−1153.946	37.672
	1700.00	140.479	259.727	155.607	−1479.861	177.003	−1921.397	−1658.145	−1122.366	34.486
	1800.00	141.421	267.783	161.617	−1465.766	191.098	−1947.775	−1655.973	−1090.912	31.657
	1900.00	142.301	275.453	167.409	−1451.579	205.285	−1974.940	−1653.745	−1059.580	29.130
	2000.00	143.127	282.774	172.995	−1437.307	219.557	−2002.854	−1651.467	−1028.367	26.858
	2100.00	143.906	289.776	178.391	−1422.955	233.909	−2031.484	−1649.143	−997.269	24.806
	2200.00	144.642	296.487	183.607	−1408.528	248.336	−2060.800	−1646.777	−966.282	22.942
	2290.00	145.273	302.299	188.158	−1395.481	261.383	−2087.747	−1644.615	−938.487	21.407

References

Phase	H / S	C_p	Remarks	
SOL−C	Ja1	Ja1	Ja1	MPT= 2290.

Al2O3[D] ALUMINUIM OXIDE (DELTA) 101.961

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−D	298.15	81.362	50.626	50.626	−1666.487	0.000	−1681.581	−1666.487	−1572.974	275.579
	300.00	81.790	51.131	50.628	−1666.336	0.151	−1681.675	−1666.508	−1572.394	273.778
	400.00	99.128	77.276	54.075	−1657.206	9.281	−1688.117	−1666.848	−1540.934	201.225
	500.00	109.244	100.574	61.094	−1646.747	19.740	−1697.034	−1666.259	−1509.511	157.698
	600.00	115.757	121.106	69.420	−1635.476	31.011	−1708.139	−1665.237	−1478.253	128.693
	700.00	120.323	139.312	78.129	−1623.660	42.827	−1721.178	−1664.036	−1447.183	107.990
	800.00	123.746	155.612	86.814	−1611.449	55.038	−1735.938	−1662.835	−1416.287	92.474
	900.00	126.449	170.349	95.290	−1598.934	67.553	−1752.248	−1661.805	−1385.533	80.414
	1000.00	128.671	183.790	103.478	−1586.175	80.312	−1769.965	−1682.129	−1353.362	70.692
	1100.00	130.556	196.144	111.348	−1573.211	93.276	−1788.970	−1680.778	−1320.550	62.708
	1200.00	132.192	207.576	118.897	−1560.072	106.415	−1809.163	−1679.312	−1287.866	56.059
	1300.00	133.640	218.215	126.132	−1546.779	119.708	−1830.459	−1677.743	−1255.308	50.439
	1400.00	134.939	228.167	133.069	−1533.349	133.138	−1852.783	−1676.083	−1222.875	45.626
	1500.00	136.118	237.518	139.723	−1519.795	146.692	−1876.072	−1674.341	−1190.563	41.459
	1600.00	137.199	246.338	146.114	−1506.128	160.359	−1900.269	−1672.524	−1158.370	37.817
	1700.00	138.197	254.686	152.257	−1492.358	174.129	−1925.324	−1670.641	−1126.293	34.607
	1800.00	139.124	262.611	158.169	−1478.491	187.996	−1951.192	−1668.698	−1094.328	31.757
	1900.00	139.989	270.157	163.867	−1464.535	201.952	−1977.833	−1666.701	−1062.473	29.209
	2000.00	140.802	277.358	169.362	−1450.495	215.992	−2005.212	−1664.655	−1030.724	26.920
	2100.00	141.567	284.247	174.670	−1436.377	230.110	−2033.295	−1662.564	−999.079	24.851
	2200.00	142.291	290.849	179.802	−1422.183	244.304	−2062.052	−1660.433	−967.534	22.972
	2300.00	142.979	297.190	184.769	−1407.920	258.567	−2091.456	−1658.264	−936.087	21.259
	2308.00	143.032	297.686	185.160	−1406.775	259.712	−2093.835	−1658.089	−933.576	21.129

References

Phase	H / S	C_p	Remarks	
SOL−D	Ja1	Ja1	Ja1	MPT= 2308.

101.961

ALUMINIUM–OXIDE (KAPPA) **Al2O3**[K]

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL–K	298.15	80.730	53.555	53.555	–1666.487	0.000	–1682.454	–1666.487	–1573.847	275.731
	300.00	81.155	54.056	53.557	–1666.337	0.150	–1682.554	–1666.509	–1573.272	273.931
	400.00	98.357	79.998	56.977	–1657.279	9.208	–1689.278	–1666.920	–1542.095	201.377
	500.00	108.396	103.115	63.941	–1646.900	19.587	–1698.458	–1666.412	–1510.935	157.846
	600.00	114.860	123.487	72.203	–1635.716	30.771	–1709.809	–1665.478	–1479.923	128.839
	700.00	119.390	141.552	80.845	–1623.992	42.495	–1723.078	–1664.369	–1449.084	108.132
	800.00	122.786	157.726	89.462	–1611.876	54.611	–1738.056	–1663.262	–1418.405	92.612
	900.00	125.468	172.348	97.872	–1599.458	67.029	–1754.572	–1662.330	–1387.857	80.549
	1000.00	127.672	185.685	105.996	–1586.798	79.689	–1772.483	–1682.752	–1355.881	70.824
	1100.00	129.541	197.943	113.805	–1573.935	92.552	–1791.673	–1681.503	–1323.253	62.836
	1200.00	131.165	209.286	121.295	–1560.898	105.589	–1812.041	–1680.139	–1290.744	56.185
	1300.00	132.601	219.843	128.474	–1547.708	118.779	–1833.504	–1678.673	–1258.353	50.561
	1400.00	133.890	229.717	135.357	–1534.383	132.104	–1855.987	–1677.117	–1226.079	45.746
	1500.00	135.061	238.995	141.960	–1520.934	145.553	–1879.427	–1675.480	–1193.919	41.576
	1600.00	136.134	247.747	148.301	–1507.374	159.113	–1903.769	–1673.770	–1161.870	37.931
	1700.00	137.124	256.030	154.397	–1493.710	172.777	–1928.961	–1671.994	–1129.930	34.719
	1800.00	138.044	263.894	160.263	–1479.951	186.536	–1954.961	–1670.158	–1098.097	31.866
	1900.00	138.903	271.381	165.916	–1466.104	200.383	–1981.727	–1668.269	–1066.367	29.316
	2000.00	139.709	278.526	171.369	–1452.173	214.314	–2009.225	–1666.332	–1034.738	27.025
	2100.00	140.469	285.361	176.636	–1438.163	228.324	–2037.422	–1664.351	–1003.206	24.953
	2200.00	141.187	291.913	181.728	–1424.080	242.407	–2066.288	–1662.329	–971.771	23.073
	2300.00	141.869	298.204	186.656	–1409.927	256.560	–2095.796	–1660.272	–940.428	21.358
	2312.00	141.949	298.942	187.237	–1408.224	258.263	–2099.379	–1660.023	–936.672	21.162

References

Phase	H / S	C_p	Remarks	
SOL–K	Ja1	Ja1	Ja1	MPT= 2312.

Al4B2O9 — 4–ALUMINIUM 2–BORON 9–OXIDE — 273.543

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	222.643	155.645	155.645	–4691.519	0.000	–4737.924	–4691.519	–4425.487	775.327
	300.00	223.828	157.026	155.649	–4691.106	0.413	–4738.214	–4691.573	–4423.836	770.258
	400.00	269.261	228.352	165.066	–4666.205	25.314	–4757.545	–4692.798	–4334.330	566.005
	500.00	296.123	291.520	184.175	–4637.846	53.673	–4783.606	–4692.230	–4244.755	443.447
	600.00	315.674	347.310	206.807	–4607.217	84.302	–4815.603	–4690.799	–4155.384	361.758
	700.00	331.773	397.211	230.505	–4574.825	116.694	–4852.872	–4688.830	–4066.298	303.431
	800.00	346.032	442.459	254.214	–4540.923	150.596	–4894.890	–4686.519	–3977.519	259.705
	900.00	359.222	483.986	277.468	–4505.653	185.866	–4941.240	–4684.092	–3889.040	225.714
	1000.00	371.748	522.486	300.068	–4469.101	222.418	–4991.587	–4723.822	–3797.797	198.377
	1100.00	383.840	558.488	321.941	–4431.318	260.201	–5045.655	–4719.590	–3705.392	175.954
	1200.00	395.637	592.394	343.080	–4392.342	299.177	–5103.215	–4714.462	–3613.412	157.288
	1300.00	407.225	624.520	363.504	–4352.198	339.321	–5164.074	–4708.423	–3521.896	141.512
	1308.00	408.145	627.021	365.108	–4348.936	342.583	–5169.080	–4707.900	–3514.596	140.354

References

Phase	H / S	C_p	Remarks
SOL	Ku1	Ku1,e	T3 DPT= 1308. (peritec.)

Al18B4O33 — 18–ALUMINIUM 4–BORON 33–OXIDE — 1056.892

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	823.166	653.959	653.959	–17729.282	0.000	–17924.260	–17729.282	–16756.348	2935.643
	300.00	828.093	659.066	653.975	–17727.755	1.527	–17925.474	–17729.545	–16750.310	2916.488
	400.00	1017.216	926.167	689.109	–17634.459	94.823	–18004.926	–17735.853	–16422.583	2144.569
	500.00	1127.529	1165.874	760.973	–17526.832	202.450	–18109.769	–17733.157	–16094.454	1681.376
	600.00	1204.680	1378.612	846.528	–17410.031	319.251	–18237.199	–17726.002	–15767.331	1372.668
	700.00	1264.309	1568.964	936.377	–17286.471	442.811	–18384.746	–17716.366	–15441.623	1152.268
	800.00	1312.949	1741.065	1026.378	–17157.533	571.749	–18550.384	–17705.657	–15117.386	987.064
	900.00	1353.721	1898.129	1114.640	–17024.142	705.140	–18732.458	–17695.374	–14794.483	858.649
	1000.00	1388.270	2042.596	1200.309	–16886.995	842.287	–18929.591	–17876.208	–14458.998	755.261
	1100.00	1417.528	2176.324	1283.034	–16746.664	982.618	–19140.620	–17861.046	–14117.995	670.408
	1200.00	1442.056	2300.749	1362.720	–16603.647	1125.635	–19364.546	–17844.088	–13778.454	599.761
	1300.00	1462.208	2416.999	1439.396	–16458.398	1270.884	–19600.497	–17825.672	–13440.389	540.041
	1400.00	1478.216	2525.971	1513.158	–16311.343	1417.939	–19847.703	–17806.142	–13103.786	488.908
	1500.00	1490.239	2628.390	1584.128	–16162.888	1566.394	–20105.473	–17785.847	–12768.608	444.642
	1600.00	1498.385	2724.849	1652.438	–16013.425	1715.857	–20373.183	–17765.143	–12434.800	405.955

References

Phase	H / S	C_p
SOL	Ku1	Ku1,e

78.434

ALUMINIUM CHLORIDE OXIDE

AlOCl

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	56.902	54.392	54.392	−793.286	0.000	−809.503	−793.286	−737.229	129.160
	300.00	57.111	54.745	54.393	−793.181	0.105	−809.604	−793.284	−736.882	128.302
	400.00	64.308	72.277	56.735	−787.069	6.217	−815.980	−792.899	−718.126	93.778
	500.00	69.203	87.179	61.371	−780.382	12.904	−823.972	−792.167	−699.512	73.078
	600.00	72.634	100.120	66.775	−773.279	20.007	−833.351	−791.216	−681.068	59.292
	700.00	75.186	111.511	72.368	−765.886	27.400	−843.944	−790.156	−662.792	49.458

References

Phase	H / S	C_p
SOL	Ja1	Ja1

78.434

ALUMINIUM CHLORIDE OXIDE (GAS)

AlOCl[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	50.074	248.936	248.936	−348.109	0.000	−422.329	−348.109	−350.056	61.328
	300.00	50.163	249.246	248.937	−348.016	0.093	−422.790	−348.120	−350.068	60.952
	400.00	54.101	264.259	250.957	−342.788	5.321	−448.492	−348.618	−350.638	45.789
	500.00	56.540	276.615	254.890	−337.246	10.863	−475.554	−349.032	−351.094	36.679
	600.00	58.074	287.070	259.405	−331.510	16.599	−503.752	−349.448	−351.468	30.598
	700.00	59.085	296.103	264.017	−325.649	22.460	−532.921	−349.919	−351.769	26.249
	800.00	59.783	304.041	268.534	−319.703	28.406	−562.936	−350.497	−351.996	22.983
	900.00	60.283	311.112	272.879	−313.699	34.410	−593.700	−351.246	−352.140	20.438
	1000.00	60.653	317.484	277.026	−307.651	40.458	−625.135	−362.745	−351.431	18.357
	1100.00	60.934	323.279	280.971	−301.571	46.538	−657.178	−363.471	−350.265	16.633
	1200.00	61.153	328.590	284.721	−295.466	52.643	−689.775	−364.198	−349.032	15.193
	1300.00	61.326	333.492	288.287	−289.342	58.767	−722.882	−364.926	−347.739	13.972
	1400.00	61.465	338.042	291.680	−283.202	64.907	−756.461	−365.658	−346.389	12.924
	1500.00	61.579	342.287	294.914	−277.050	71.059	−790.480	−366.396	−344.987	12.014
	1600.00	61.673	346.264	298.001	−270.887	77.222	−824.910	−367.139	−343.536	11.215
	1700.00	61.751	350.006	300.951	−264.716	83.393	−859.725	−367.890	−342.038	10.510
	1800.00	61.817	353.537	303.775	−258.537	89.572	−894.904	−368.650	−340.495	9.881
	1900.00	61.872	356.881	306.483	−252.353	95.756	−930.426	−369.419	−338.910	9.317
	2000.00	61.919	360.056	309.083	−246.163	101.946	−966.275	−370.198	−337.284	8.809
	2100.00	61.959	363.078	311.583	−239.969	108.140	−1002.433	−370.988	−335.619	8.348
	2200.00	61.994	365.961	313.989	−233.772	114.337	−1038.886	−371.789	−333.916	7.928
	2300.00	62.023	368.717	316.309	−227.571	120.538	−1075.620	−372.602	−332.177	7.544
	2400.00	62.048	371.358	318.548	−221.367	126.742	−1112.625	−373.428	−330.401	7.191
	2500.00	62.069	373.891	320.712	−215.161	132.948	−1149.888	−374.267	−328.591	6.866

References

Phase	H / S	C_p
GAS	Ja1	Ja1

AlOF[g] ALUMINIUM FLUORIDE OXIDE (GAS) 61.979

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	46.814	237.300	237.300	−581.576	0.000	−652.327	−581.576	−583.083	102.154
	300.00	46.909	237.590	237.301	−581.489	0.087	−652.766	−581.590	−583.092	101.525
	400.00	51.462	251.744	239.200	−576.558	5.018	−677.256	−582.259	−583.487	76.196
	500.00	54.504	263.579	242.925	−571.249	10.327	−703.039	−582.801	−583.730	60.982
	600.00	56.483	273.704	247.232	−565.693	15.883	−729.915	−583.316	−583.867	50.830
	700.00	57.818	282.518	251.657	−559.973	21.603	−757.736	−583.866	−583.916	43.572
	800.00	58.756	290.303	256.010	−554.142	27.434	−786.384	−584.508	−583.881	38.124
	900.00	59.438	297.265	260.214	−548.231	33.345	−815.769	−585.312	−583.757	33.880
	1000.00	59.950	303.555	264.239	−542.260	39.316	−845.815	−596.857	−582.773	30.441
	1100.00	60.344	309.288	268.078	−536.245	45.331	−876.461	−597.624	−581.328	27.605
	1200.00	60.653	314.552	271.734	−530.194	51.382	−907.657	−598.387	−579.812	25.239
	1300.00	60.899	319.417	275.217	−524.116	57.460	−939.359	−599.149	−578.234	23.234
	1400.00	61.097	323.938	278.538	−518.016	63.560	−971.529	−599.912	−576.596	21.513
	1500.00	61.258	328.159	281.707	−511.898	69.678	−1004.136	−600.678	−574.904	20.020
	1600.00	61.390	332.117	284.735	−505.765	75.811	−1037.152	−601.448	−573.161	18.712
	1700.00	61.498	335.842	287.633	−499.621	81.955	−1070.552	−602.225	−571.369	17.556
	1800.00	61.585	339.359	290.410	−493.466	88.110	−1104.313	−603.010	−569.531	16.527
	1900.00	61.656	342.691	293.074	−487.304	94.272	−1138.417	−603.804	−567.650	15.606
	2000.00	61.713	345.855	295.635	−481.136	100.440	−1172.846	−604.608	−565.726	14.775

References

Phase	H / S	C_p
GAS	Ja1	Ja1

80.978

ALUMINIUM DIFLUORIDE OXIDE (GAS) **AlOF2[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	63.393	292.697	292.697	−1108.760	0.000	−1196.027	−1108.760	−1096.552	192.111
	300.00	63.515	293.089	292.698	−1108.643	0.117	−1196.569	−1108.773	−1096.476	190.913
	400.00	69.346	312.206	295.265	−1101.983	6.777	−1226.866	−1109.319	−1092.288	142.638
	500.00	73.223	328.129	300.290	−1094.840	13.920	−1258.905	−1109.710	−1087.983	113.661
	600.00	75.737	341.717	306.090	−1087.384	21.376	−1292.414	−1110.061	−1083.605	94.336
	700.00	77.429	353.527	312.042	−1079.720	29.040	−1327.189	−1110.442	−1079.166	80.528
	800.00	78.615	363.948	317.892	−1071.915	36.845	−1363.073	−1110.913	−1074.667	70.169
	900.00	79.480	373.260	323.536	−1064.008	44.752	−1399.942	−1111.545	−1070.101	62.107
	1000.00	80.131	381.670	328.935	−1056.026	52.734	−1437.695	−1122.919	−1064.695	55.614
	1100.00	80.635	389.332	334.083	−1047.987	60.773	−1476.251	−1123.516	−1058.843	50.280
	1200.00	81.036	396.366	338.984	−1039.902	68.858	−1515.541	−1124.109	−1052.938	45.833
	1300.00	81.361	402.865	343.651	−1031.782	76.978	−1555.506	−1124.701	−1046.983	42.068
	1400.00	81.631	408.905	348.099	−1023.632	85.128	−1596.099	−1125.296	−1040.982	38.840
	1500.00	81.857	414.545	352.343	−1015.457	93.303	−1637.274	−1125.893	−1034.939	36.040
	1600.00	82.051	419.834	356.397	−1007.261	101.499	−1678.996	−1126.496	−1028.856	33.589
	1700.00	82.220	424.813	360.277	−999.048	109.712	−1721.231	−1127.105	−1022.734	31.425
	1800.00	82.367	429.517	363.994	−990.818	117.942	−1763.949	−1127.720	−1016.577	29.500
	1900.00	82.499	433.974	367.561	−982.575	126.185	−1807.126	−1128.344	−1010.386	27.777
	2000.00	82.617	438.209	370.988	−974.319	134.441	−1850.737	−1128.977	−1004.161	26.226

References

Phase	H / S	C_p
GAS	Ja1	Ja1

78.004

ALUMINIUM HYDROXIDE (AMORPHOUS) **Al(OH)3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	93.149	71.128	71.128	−1276.120	0.000	−1297.327	−1276.120	−1138.706	199.497
	300.00	93.538	71.705	71.130	−1275.947	0.173	−1297.459	−1276.154	−1137.854	198.118
	400.00	114.516	101.488	75.049	−1265.545	10.575	−1306.140	−1277.073	−1091.566	142.544
	500.00	135.495	129.295	83.143	−1253.044	23.076	−1317.691	−1276.186	−1045.254	109.197
	600.00	156.473	155.853	93.062	−1238.446	37.674	−1331.957	−1273.476	−999.291	86.996
	700.00	177.452	181.549	103.876	−1221.749	54.371	−1348.833	−1268.935	−953.927	71.183

References

Phase	H / S	C_p
SOL	Nb1/e	M1,e

Al2O3*H2O DIASPORE 119.977

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	106.209	70.668	70.668	−1999.115	0.000	−2020.185	−1999.115	−1842.033	322.717
	300.00	106.274	71.325	70.670	−1998.918	0.197	−2020.316	−1999.170	−1841.058	320.557
	400.00	109.788	102.379	74.880	−1988.115	11.000	−2029.067	−2002.229	−1787.896	233.475
	500.00	113.303	127.255	82.947	−1976.961	22.154	−2040.589	−2005.397	−1733.948	181.144

References

Phase	H / S	C_p
SOL	Nb1	Nb1,e

Al2O3*H2O[B] BOEHMITE 119.977

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	131.271	96.860	96.860	−1980.706	0.000	−2009.585	−1980.706	−1831.433	320.859
	300.00	131.336	97.672	96.862	−1980.463	0.243	−2009.765	−1980.715	−1830.507	318.720
	400.00	134.850	135.936	102.056	−1967.154	13.552	−2021.528	−1981.267	−1780.357	232.491
	500.00	138.365	166.405	111.979	−1953.493	27.213	−2036.695	−1981.929	−1730.055	180.738

References

Phase	H / S	C_p
SOL	Nb1	Ke1

156.007

GIBBSITE

Al2O3*3H2O

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	183.474	136.901	136.901	−2586.549	0.000	−2627.366	−2586.549	−2310.125	404.724
	300.00	184.180	138.038	136.904	−2586.209	0.340	−2627.620	−2586.622	−2308.410	401.930
	400.00	222.338	196.249	144.584	−2565.883	20.666	−2644.383	−2588.941	−2215.234	289.280
	500.00	260.496	249.961	160.346	−2541.741	44.808	−2666.722	−2588.026	−2121.846	221.668

References

Phase	H / S	C_p
SOL	Nb1,Tk1	Nb1,Ke1

584.953

CORDIERITE

Al4Mg2Si5O18

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	452.309	407.103	407.103	−9161.701	0.000	−9283.079	−9161.701	−8651.336	1515.678
	300.00	455.255	409.910	407.112	−9160.861	0.840	−9283.835	−9161.808	−8648.169	1505.780
	400.00	562.003	557.510	426.511	−9109.301	52.400	−9332.305	−9162.729	−8476.595	1106.930
	500.00	616.312	689.313	466.180	−9050.134	111.567	−9394.791	−9158.389	−8305.497	867.669
	600.00	649.979	804.859	513.205	−8986.708	174.993	−9469.624	−9151.875	−8135.508	708.259
	700.00	673.900	906.938	562.305	−8920.457	241.244	−9555.314	−9144.436	−7966.694	594.482
	800.00	692.628	998.190	611.188	−8852.099	309.602	−9650.651	−9136.705	−7798.972	509.221
	900.00	708.335	1080.700	658.845	−8782.032	379.669	−9754.661	−9129.125	−7632.214	442.962
	1000.00	722.167	1156.059	704.852	−8710.494	451.207	−9866.553	−9181.985	−7461.730	389.761
	1100.00	734.773	1225.488	749.068	−8637.639	524.062	−9985.676	−9173.215	−7290.124	346.179
	1200.00	746.546	1289.932	791.487	−8563.567	598.134	−10111.485	−9163.806	−7119.344	309.897
	1300.00	757.730	1350.132	832.169	−8488.349	673.352	−10243.521	−9153.771	−6949.375	279.229
	1400.00	768.488	1406.682	871.206	−8412.035	749.666	−10381.390	−9397.049	−6772.945	252.702
	1500.00	778.930	1460.060	908.700	−8334.662	827.039	−10524.752	−9383.426	−6585.981	229.344
	1600.00	789.132	1510.657	944.755	−8256.257	905.444	−10673.309	−9369.210	−6399.945	208.937
	1700.00	799.149	1558.800	979.471	−8176.842	984.859	−10826.801	−9605.295	−6212.582	190.889

References

Phase	H / S	C_p
SOL	Nb1	e

Al2SiO5 ALUMINIUM SILICATE (KYANITE) 162.046

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	121.764	84.467	84.467	−2594.080	0.000	−2619.264	−2594.080	−2443.881	428.158
	300.00	122.292	85.221	84.469	−2593.854	0.226	−2619.421	−2594.117	−2442.949	425.355
	400.00	148.280	124.145	89.598	−2580.262	13.818	−2629.919	−2595.088	−2392.359	312.410
	500.00	165.494	159.234	100.083	−2564.505	29.575	−2644.121	−2594.539	−2341.718	244.638
	600.00	176.231	190.430	112.593	−2547.378	46.702	−2661.636	−2593.198	−2291.271	199.473
	700.00	183.245	218.158	125.731	−2529.381	64.699	−2682.092	−2591.521	−2241.080	167.231
	800.00	188.270	242.970	138.863	−2510.794	83.286	−2705.170	−2589.788	−2191.136	143.066
	900.00	192.365	265.387	151.696	−2491.758	102.322	−2730.606	−2588.203	−2141.402	124.284
	1000.00	196.212	285.853	164.103	−2472.329	121.751	−2758.183	−2607.929	−2090.314	109.187
	1100.00	199.817	304.728	176.040	−2452.523	141.557	−2787.724	−2605.900	−2038.649	96.807
	1200.00	203.034	322.255	187.503	−2432.378	161.702	−2819.083	−2603.677	−1987.178	86.500
	1300.00	206.017	338.625	198.505	−2411.924	182.156	−2852.136	−2601.272	−1935.899	77.785
	1400.00	208.843	353.997	209.068	−2391.180	202.900	−2886.775	−2598.694	−1884.813	70.323
	1500.00	211.562	368.499	219.218	−2370.159	223.921	−2922.907	−2595.950	−1833.916	63.863
	1600.00	214.204	382.237	228.981	−2348.870	245.210	−2960.449	−2593.045	−1783.207	58.216
	1700.00	216.792	395.301	238.383	−2327.320	266.760	−2999.332	−2640.157	−1732.239	53.225
	1800.00	219.340	407.765	247.450	−2305.513	288.567	−3039.490	−2636.709	−1678.930	48.721
	1900.00	221.857	419.692	256.203	−2283.453	310.627	−3080.867	−2633.067	−1625.819	44.697
	2000.00	224.351	431.135	264.666	−2261.142	332.938	−3123.412	−2629.233	−1572.904	41.080

References

Phase	H / S	C_p
SOL	Pa3	Ja1

162.046

ALUMINIUM SILICATE (ANDALUSITE) **Al2SiO5**[A]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	122.760	93.776	93.776	−2590.314	0.000	−2618.273	−2590.314	−2442.890	427.984
	300.00	123.323	94.537	93.778	−2590.086	0.228	−2618.448	−2590.349	−2441.976	425.186
	400.00	149.593	133.868	98.961	−2576.351	13.963	−2629.898	−2591.178	−2392.339	312.407
	500.00	165.303	169.100	109.538	−2560.533	29.781	−2645.083	−2590.568	−2342.679	244.738
	600.00	174.641	200.128	122.106	−2543.501	46.813	−2663.578	−2589.321	−2293.212	199.642
	700.00	181.025	227.553	135.249	−2525.702	64.612	−2684.989	−2587.841	−2243.977	167.448
	800.00	186.091	252.066	148.347	−2507.338	82.976	−2708.991	−2586.333	−2194.957	143.316
	900.00	190.426	274.241	161.122	−2488.507	101.807	−2735.324	−2584.953	−2146.120	124.558
	1000.00	194.043	294.499	173.462	−2469.277	121.037	−2763.776	−2604.877	−2095.908	109.479
	1100.00	197.352	313.151	185.324	−2449.704	140.610	−2794.170	−2603.081	−2045.096	97.114
	1200.00	200.443	330.457	196.706	−2429.813	160.501	−2826.361	−2601.111	−1994.456	86.816
	1300.00	203.389	346.618	207.623	−2409.620	180.694	−2860.224	−2598.968	−1943.987	78.110
	1400.00	206.220	361.795	218.099	−2389.139	201.175	−2895.652	−2596.653	−1893.689	70.654
	1500.00	208.959	376.117	228.160	−2368.379	221.935	−2932.554	−2594.171	−1843.563	64.199
	1600.00	211.626	389.688	237.835	−2347.349	242.965	−2970.850	−2591.524	−1793.608	58.555
	1700.00	214.234	402.596	247.150	−2326.056	264.258	−3010.470	−2638.893	−1743.377	53.567
	1800.00	216.794	414.914	256.131	−2304.504	285.810	−3051.350	−2635.701	−1690.791	49.065
	1900.00	219.314	426.704	264.801	−2282.698	307.616	−3093.435	−2632.313	−1638.387	45.042
	2000.00	221.802	438.016	273.180	−2260.642	329.672	−3136.675	−2628.733	−1586.167	41.426

References

Phase	H / S	C_p
SOL	Pa3	Ja1

Al2SiO5[S] ALUMINIUM SILICATE (SILLIMANITE) 162.046

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	122.230	96.090	96.090	−2587.804	0.000	−2616.453	−2587.804	−2441.070	427.665
	300.00	122.747	96.847	96.092	−2587.577	0.227	−2616.632	−2587.840	−2440.160	424.870
	400.00	147.475	135.752	101.228	−2573.994	13.810	−2628.295	−2588.821	−2390.735	312.198
	500.00	163.202	170.496	111.678	−2558.395	29.409	−2643.643	−2588.430	−2341.239	244.588
	600.00	173.008	201.182	124.091	−2541.549	46.255	−2662.258	−2587.369	−2291.893	199.527
	700.00	179.758	228.385	137.084	−2523.894	63.910	−2683.763	−2586.033	−2242.751	167.356
	800.00	185.004	252.742	150.046	−2505.647	82.157	−2707.841	−2584.641	−2193.806	143.241
	900.00	189.494	274.797	162.701	−2486.918	100.886	−2734.235	−2583.363	−2145.030	124.494
	1000.00	193.535	294.974	174.933	−2467.763	120.041	−2762.737	−2603.363	−2094.869	109.425
	1100.00	197.258	313.594	186.703	−2448.224	139.580	−2793.178	−2601.602	−2044.103	97.066
	1200.00	200.826	330.912	198.007	−2428.319	159.485	−2825.413	−2599.617	−1993.508	86.775
	1300.00	204.238	347.122	208.861	−2408.064	179.740	−2859.323	−2597.412	−1943.086	78.074
	1400.00	207.536	362.379	219.287	−2387.475	200.329	−2894.806	−2594.989	−1892.843	70.623
	1500.00	210.748	376.808	229.312	−2366.560	221.244	−2931.771	−2592.352	−1842.780	64.171
	1600.00	213.894	390.510	238.962	−2345.327	242.477	−2970.143	−2589.502	−1792.901	58.532
	1700.00	216.989	403.570	248.263	−2323.783	264.021	−3009.852	−2636.620	−1742.759	53.548
	1800.00	220.042	416.059	257.241	−2301.931	285.873	−3050.838	−2633.128	−1690.279	49.051
	1900.00	223.064	428.038	265.917	−2279.775	308.029	−3093.047	−2629.390	−1637.999	45.032
	2000.00	226.058	439.555	274.313	−2257.319	330.485	−3136.430	−2625.410	−1585.922	41.420

References

Phase	H / S	C_p
SOL	Pa3	Ja1

426.052

MULLITE **Al6Si2O13**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	325.437	274.889	274.889	−6820.464	0.000	−6902.422	−6820.464	−6443.049	1128.795
	300.00	326.955	276.907	274.895	−6819.861	0.603	−6902.933	−6820.558	−6440.707	1121.427
	400.00	390.477	380.409	288.576	−6783.731	36.733	−6935.894	−6823.025	−6313.592	824.471
	500.00	431.695	472.269	316.317	−6742.488	77.976	−6978.622	−6822.069	−6186.292	646.278
	600.00	459.452	553.604	349.222	−6697.835	122.629	−7029.997	−6819.236	−6059.381	527.516
	700.00	479.840	626.080	383.693	−6650.793	169.671	−7089.049	−6815.448	−5933.030	442.728
	800.00	493.981	691.126	418.127	−6602.065	218.399	−7154.966	−6811.440	−5807.245	379.174
	900.00	504.611	749.949	451.781	−6552.112	268.352	−7227.067	−6807.875	−5681.943	329.771
	1000.00	513.042	803.567	484.318	−6501.215	319.249	−7304.782	−6868.369	−5552.444	290.030
	1100.00	520.019	852.802	515.609	−6449.552	370.912	−7387.634	−6863.875	−5421.066	257.425
	1200.00	525.990	898.312	545.629	−6397.245	423.219	−7475.219	−6859.083	−5290.111	230.273
	1300.00	531.236	940.625	574.405	−6344.378	476.086	−7567.190	−6854.038	−5159.566	207.314
	1400.00	535.945	980.169	601.991	−6291.015	529.449	−7663.251	−6848.779	−5029.418	187.650
	1500.00	540.240	1017.294	628.453	−6237.203	583.261	−7763.143	−6843.332	−4899.653	170.621
	1600.00	544.211	1052.288	653.860	−6182.978	637.486	−7866.639	−6837.723	−4770.256	155.733
	1700.00	547.919	1085.393	678.279	−6128.369	692.095	−7973.538	−6932.328	−4640.321	142.580
	1800.00	551.411	1116.811	701.776	−6073.401	747.063	−8083.662	−6926.002	−4505.679	130.751
	1900.00	554.721	1146.714	724.414	−6018.093	802.371	−8196.850	−6919.488	−4371.393	120.178
	2000.00	557.874	1175.248	746.247	−5962.462	858.002	−8312.959	−6912.803	−4237.455	110.671
	2023.00	558.579	1181.631	751.161	−5949.623	870.841	−8340.063	−6911.242	−4206.698	108.619

References

Phase	H / S	C_p	Remarks
SOL	Ja1	Ja1	Ja1 MPT= 2023.

258.160

KAOLINITE **Al2Si2O7*2H2O**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	246.136	205.016	205.016	−4119.566	0.000	−4180.692	−4119.566	−3799.444	665.647
	300.00	247.255	206.542	205.021	−4119.110	0.456	−4181.072	−4119.625	−3797.457	661.196
	400.00	291.439	284.348	215.330	−4091.958	27.608	−4205.698	−4120.914	−3689.783	481.836
	500.00	319.344	352.553	236.104	−4061.341	58.225	−4237.618	−4119.747	−3582.097	374.219
	600.00	340.842	412.740	260.626	−4028.297	91.269	−4275.941	−4117.042	−3474.800	302.508
	700.00	359.314	466.695	286.275	−3993.272	126.294	−4319.959	−4113.170	−3368.051	251.327

References

Phase	H / S	C_p
SOL	Nb1	S5

Al2Si2O7*2H2O[D] DICKITE 258.160

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	239.484	197.108	197.108	−4118.299	0.000	−4177.067	−4118.299	−3795.819	665.012
	300.00	240.603	198.593	197.113	−4117.855	0.444	−4177.433	−4118.370	−3793.818	660.562
	400.00	284.786	274.486	207.161	−4091.369	26.930	−4201.163	−4120.325	−3685.249	481.244
	500.00	312.691	341.206	227.442	−4061.417	56.882	−4232.020	−4119.823	−3576.500	373.634
	600.00	334.189	400.180	251.412	−4029.039	89.260	−4269.146	−4117.783	−3468.005	301.917
	700.00	352.662	453.110	276.509	−3994.678	123.621	−4311.855	−4114.576	−3359.947	250.722

References

Phase	H / S	C_p
SOL	Nb1	e

Al2Si2O7*2H2O[H] HALLOYSITE 258.160

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	246.262	203.301	203.301	−4101.199	0.000	−4161.813	−4101.199	−3780.565	662.339
	300.00	247.381	204.827	203.305	−4100.742	0.457	−4162.191	−4101.258	−3778.576	657.909
	400.00	291.564	282.670	213.619	−4073.579	27.620	−4186.647	−4102.534	−3670.732	479.348
	500.00	319.469	350.902	234.403	−4042.949	58.250	−4218.400	−4101.355	−3562.880	372.211
	600.00	340.967	411.112	258.935	−4009.893	91.306	−4256.560	−4098.637	−3455.418	300.821
	700.00	359.440	465.087	284.595	−3974.855	126.344	−4300.415	−4094.752	−3348.508	249.869

References

Phase	H / S	C_p
SOL	Nb1	e

181.840

DIALUMINIUM TITANIUM PENTAOXIDE

Al2TiO5

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	136.397	109.621	109.621	–2628.807	0.000	–2661.490	–2628.807	–2482.548	434.932
	300.00	137.086	110.467	109.623	–2628.554	0.253	–2661.694	–2628.826	–2481.640	432.092
	400.00	162.104	153.800	115.362	–2613.432	15.375	–2674.952	–2628.734	–2432.541	317.657
	500.00	174.874	191.475	126.910	–2596.524	32.283	–2692.262	–2627.456	–2383.626	249.016
	600.00	182.825	224.109	140.453	–2578.613	50.194	–2713.079	–2625.739	–2335.017	203.281
	700.00	188.499	252.738	154.491	–2560.034	68.773	–2736.950	–2623.902	–2286.708	170.636
	800.00	192.960	278.210	168.393	–2540.953	87.854	–2763.521	–2622.140	–2238.660	146.170
	900.00	196.715	301.159	181.890	–2521.465	107.342	–2792.508	–2620.622	–2190.820	127.152
	1000.00	200.033	322.060	194.878	–2501.625	127.182	–2823.685	–2640.521	–2141.613	111.866
	1100.00	203.064	341.269	207.325	–2481.468	147.339	–2856.864	–2638.792	–2091.806	99.332
	1200.00	205.901	359.061	219.237	–2461.018	167.789	–2891.892	–2640.976	–2042.040	88.888
	1300.00	208.600	375.649	230.638	–2440.292	188.515	–2928.636	–2638.543	–1992.226	80.049
	1400.00	211.200	391.204	241.557	–2419.302	209.505	–2966.987	–2635.985	–1942.605	72.479
	1500.00	213.726	405.862	252.027	–2398.055	230.752	–3006.847	–2633.308	–1893.170	65.926
	1600.00	216.196	419.734	262.079	–2376.558	252.249	–3048.133	–2630.523	–1843.918	60.198
	1700.00	218.623	432.914	271.744	–2354.817	273.990	–3090.771	–2627.639	–1794.843	55.149
	1800.00	221.016	445.478	281.049	–2332.835	295.972	–3134.695	–2624.664	–1745.941	50.666
	1900.00	223.382	457.491	290.022	–2310.615	318.192	–3179.848	–2621.605	–1697.206	46.659
	2000.00	225.726	469.009	298.685	–2288.159	340.648	–3226.177	–2632.597	–1648.189	43.046
	2100.00	228.052	480.079	307.061	–2265.470	363.337	–3273.635	–2629.278	–1599.050	39.774
	2133.00	228.817	483.640	309.765	–2257.932	370.875	–3289.537	–2628.144	–1582.869	38.763

References

Phase	H / S	C_p	Remarks	
SOL	Ku1	K7,e	K7	MPT= 2133.

AlP ALUMINIUM PHOSPHIDE 57.955

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	42.038	47.279	47.279	−164.431	0.000	−178.527	−164.431	−157.852	27.655
	300.00	42.049	47.539	47.280	−164.353	0.078	−178.615	−164.442	−157.811	27.477
	400.00	42.677	59.722	48.937	−160.117	4.314	−184.006	−165.964	−155.307	20.281
	500.00	43.304	69.312	52.086	−155.818	8.613	−190.474	−166.939	−152.531	15.935
	600.00	43.932	77.263	55.638	−151.456	12.975	−197.814	−167.964	−149.554	13.020
	700.00	44.560	84.083	59.226	−147.031	17.400	−205.889	−169.039	−146.402	10.925
	800.00	45.187	90.074	62.715	−142.544	21.887	−214.603	−170.187	−143.091	9.343
	900.00	45.815	95.432	66.058	−137.994	26.437	−223.883	−171.457	−139.629	8.104
	1000.00	46.442	100.292	69.242	−133.381	31.050	−233.673	−183.422	−135.259	7.065
	1100.00	47.070	104.748	72.270	−128.706	35.725	−243.928	−184.554	−130.388	6.192
	1200.00	47.698	108.870	75.150	−123.967	40.464	−254.611	−249.194	−124.326	5.412
	1300.00	48.325	112.713	77.894	−119.166	45.265	−265.693	−249.426	−113.911	4.577
	1400.00	48.953	116.317	80.511	−114.302	50.129	−277.146	−249.599	−103.480	3.861
	1500.00	49.580	119.716	83.012	−109.375	55.056	−288.949	−249.714	−93.038	3.240
	1600.00	50.208	122.936	85.408	−104.386	60.045	−301.083	−249.770	−82.591	2.696
	1700.00	50.836	125.998	87.706	−99.334	65.097	−313.531	−249.766	−72.142	2.217
	1800.00	51.463	128.922	89.915	−94.219	70.212	−326.278	−249.703	−61.695	1.790
	1900.00	52.091	131.721	92.042	−89.041	75.390	−339.311	−249.579	−51.254	1.409
	2000.00	52.718	134.409	94.094	−83.801	80.630	−352.619	−249.394	−40.820	1.066

References

Phase	H / S	C_p
SOL	Ku1	e

121.953

ALUMINIUM PHOSPHATE **AlPO4**

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL–A	298.15	93.004	90.793	90.793	–1733.431	0.000	–1760.501	–1733.431	–1617.497	283.379
	300.00	93.261	91.369	90.795	–1733.259	0.172	–1760.669	–1733.457	–1616.777	281.506
	400.00	107.194	120.107	94.619	–1723.236	10.195	–1771.279	–1735.134	–1577.534	206.005
	500.00	121.127	145.523	102.301	–1711.820	21.611	–1784.581	–1735.109	–1538.115	160.686
	600.00	135.060	168.839	111.471	–1699.011	34.420	–1800.314	–1734.007	–1498.801	130.482
	700.00	148.992	190.704	121.243	–1684.808	48.623	–1818.301	–1731.813	–1459.759	108.929
	800.00	162.925	211.509	131.236	–1669.212	64.219	–1838.419	–1728.526	–1421.105	92.789
	853.00	170.309	222.195	136.556	–1660.381	73.050	–1849.913	–1726.347	–1400.808	85.780
			1.521		1.297					
SOL–B	853.00	167.360	223.715	136.556	–1659.084	74.347	–1849.913	–1725.050	–1400.808	85.780
	900.00	167.360	232.692	141.344	–1651.218	82.213	–1860.641	–1723.164	–1382.993	80.267
	978.00	167.360	246.602	149.192	–1638.164	95.267	–1879.341	–1730.801	–1353.129	72.270
			1.112		1.088					
SOL–C	978.00	163.176	247.714	149.192	–1637.076	96.355	–1879.341	–1729.713	–1353.129	72.270
	1000.00	163.176	251.344	151.400	–1633.487	99.944	–1884.831	–1728.933	–1344.667	70.238
	1100.00	163.176	266.896	161.204	–1617.169	116.262	–1910.755	–1725.441	–1306.410	62.036
	1200.00	163.176	281.095	170.612	–1600.851	132.580	–1938.165	–1785.600	–1267.378	55.168

References

Phase	H / S	C_p	Remarks	
SOL–A	Nb1,Tk1	Tk1,e		
SOL–B	Tk1	e		
SOL–C	Tk1	e	Tk1	MPT= 2273.

AlS[g] ALUMINIUM MONOSULFIDE (GAS) 59.048

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	33.380	230.648	230.648	238.906	0.000	170.138	238.906	188.126	−32.959
	300.00	33.427	230.854	230.648	238.968	0.062	169.711	238.881	187.811	−32.701
	400.00	35.082	240.730	231.984	242.405	3.499	146.113	235.229	171.089	−22.342
	500.00	35.886	248.654	234.552	245.957	7.051	121.630	232.239	155.376	−16.232
	600.00	36.354	255.242	237.467	249.571	10.665	96.426	229.522	140.266	−12.211
	700.00	36.664	260.870	240.418	253.223	14.317	70.614	226.997	125.589	−9.372
	800.00	36.890	265.782	243.288	256.901	17.995	44.276	224.314	111.282	−7.266
	900.00	37.066	270.137	246.034	260.599	21.693	17.476	168.617	98.479	−5.716
	1000.00	37.212	274.050	248.643	264.313	25.407	−9.737	156.551	91.524	−4.781
	1100.00	37.339	277.603	251.117	268.041	29.135	−37.322	155.262	85.084	−4.040
	1200.00	37.451	280.857	253.461	271.781	32.875	−65.248	153.978	78.761	−3.428
	1300.00	37.554	283.859	255.686	275.531	36.625	−93.485	152.699	72.545	−2.915
	1400.00	37.650	286.645	257.799	279.291	40.385	−122.012	151.426	66.427	−2.478
	1500.00	37.741	289.246	259.809	283.061	44.155	−150.808	150.157	60.400	−2.103
	1600.00	37.828	291.685	261.726	286.839	47.933	−179.856	148.892	54.457	−1.778
	1700.00	37.912	293.980	263.557	290.626	51.720	−209.140	147.632	48.593	−1.493
	1800.00	37.994	296.150	265.308	294.422	55.516	−238.648	146.376	42.804	−1.242
	1900.00	38.074	298.206	266.986	298.225	59.319	−268.366	145.124	37.084	−1.020
	2000.00	38.152	300.161	268.596	302.036	63.130	−298.286	143.875	31.430	−0.821

References

Phase	H / S	C_p
GAS	Mi1	Mi1

150.161

ALUMINIUM SULFIDE

Al2S3

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	112.926	116.847	116.847	−723.999	0.000	−758.837	−723.999	−713.304	124.968
	300.00	112.993	117.545	116.849	−723.790	0.209	−759.054	−724.006	−713.238	124.186
	400.00	116.600	150.545	121.324	−712.310	11.689	−772.529	−731.284	−709.298	92.625
	500.00	120.206	176.951	129.893	−700.470	23.529	−788.946	−736.432	−703.273	73.470
	600.00	123.813	199.186	139.636	−688.269	35.730	−807.781	−740.469	−696.235	60.613
	700.00	127.420	218.543	149.555	−675.707	48.292	−828.688	−743.570	−688.612	51.385
	800.00	131.026	235.793	159.276	−662.785	61.214	−851.420	−746.731	−680.550	44.435
	900.00	134.633	251.434	168.660	−649.502	74.497	−875.793	−908.445	−668.619	38.806
	1000.00	138.239	265.805	177.665	−635.859	88.140	−901.664	−928.196	−640.526	33.458
	1100.00	141.846	279.150	186.291	−621.854	102.145	−928.920	−926.068	−611.859	29.055
	1200.00	145.453	291.647	194.556	−607.489	116.510	−957.466	−923.598	−583.401	25.395
	1300.00	149.059	303.432	202.482	−592.764	131.235	−987.225	−920.784	−555.163	22.307
	1370.00	151.584	311.315	207.842	−582.241	141.758	−1008.743	−918.609	−535.533	20.419
			41.229		56.484					
LIQ	1370.00	156.900	352.544	207.842	−525.757	198.242	−1008.743	−862.125	−535.533	20.419
	1400.00	156.900	355.943	210.980	−521.050	202.949	−1019.371	−860.998	−528.394	19.715
	1500.00	156.900	366.768	221.009	−505.360	218.639	−1055.512	−857.249	−504.767	17.578
	1600.00	156.900	376.894	230.439	−489.670	234.329	−1092.701	−853.513	−481.390	15.716
	1700.00	156.900	386.406	239.336	−473.980	250.019	−1130.871	−849.790	−458.246	14.080
	1800.00	156.900	395.374	247.758	−458.290	265.709	−1169.964	−846.080	−435.322	12.633

References

Phase	H / S	C_p
SOL	Nb1/Pa3	Mi1
LIQ	e	e

342.154

ALUMINIUM SULFATE

Al2(SO4)3

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	259.395	239.300	239.300	−3440.754	0.000	−3512.101	−3440.754	−3099.581	543.034
	300.00	261.055	240.909	239.305	−3440.273	0.481	−3512.545	−3440.815	−3097.464	539.316
	400.00	321.578	325.417	250.416	−3410.753	30.001	−3540.920	−3447.880	−2982.552	389.481
	500.00	352.954	400.858	273.124	−3376.887	63.867	−3577.316	−3449.356	−2866.071	299.416
	600.00	372.857	467.081	300.049	−3340.535	100.219	−3620.783	−3448.198	−2749.479	239.363
	700.00	387.343	525.694	328.178	−3302.493	138.261	−3670.479	−3445.347	−2633.238	196.495
	800.00	398.941	578.197	356.206	−3263.161	177.593	−3725.719	−3442.120	−2517.444	164.372
	900.00	408.861	625.771	383.556	−3222.760	217.994	−3785.954	−3597.148	−2398.599	139.211
	1000.00	417.739	669.316	409.985	−3181.423	259.331	−3850.739	−3609.978	−2264.351	118.278
	1100.00	425.936	709.519	435.411	−3139.235	301.519	−3919.706	−3600.721	−2130.232	101.156

References

Phase	H / S	C_p
SOL	Nb1	Ku1

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AlSb ALUMINIUM ANTIMONY 148.732

Phase	T [K]	C_p J / (K mol)	S J / (K mol)	−(G−H298)/T J / (K mol)	H kJ / mol	H−H298 kJ / mol	G kJ / mol	ΔH_f kJ / mol	ΔG_f kJ / mol	log K_f [−]
SOL	298.15	46.383	64.978	64.978	−50.350	0.000	−69.723	−50.350	−47.720	8.360
	300.00	46.401	65.264	64.978	−50.264	0.086	−69.844	−50.356	−47.704	8.306
	400.00	47.363	78.745	66.810	−45.576	4.774	−77.074	−50.738	−46.766	6.107
	500.00	48.325	89.417	70.300	−40.792	9.558	−85.500	−51.214	−45.720	4.776
	600.00	49.288	98.313	74.248	−35.911	14.439	−94.899	−51.767	−44.570	3.880
	700.00	50.250	105.983	78.246	−30.934	19.416	−105.122	−52.416	−43.321	3.233
	800.00	51.212	112.755	82.144	−25.861	24.489	−116.065	−53.213	−41.969	2.740
	900.00	52.174	118.843	85.889	−20.692	29.658	−127.650	−54.241	−40.505	2.351
	1000.00	53.137	124.390	89.466	−15.426	34.924	−139.816	−85.930	−36.043	1.883
	1100.00	54.099	129.500	92.876	−10.064	40.286	−152.514	−86.881	−31.007	1.472
	1200.00	55.061	134.248	96.128	−4.606	45.744	−165.704	−87.736	−25.889	1.127
	1300.00	56.024	138.693	99.233	0.948	51.298	−179.353	−88.495	−20.704	0.832
	1333.00	56.341	140.102	100.228	2.802	53.152	−183.953	−88.724	−18.980	0.744
			61.520		82.006					
LIQ	1333.00	58.994	201.622	100.228	84.808	135.158	−183.953	−6.718	−18.980	0.744
	1400.00	58.994	204.515	105.150	88.761	139.111	−197.560	−6.995	−19.590	0.731
	1500.00	58.994	208.585	111.911	94.660	145.010	−218.217	−7.408	−20.475	0.713
	1600.00	58.994	212.392	118.074	100.560	150.910	−239.268	−7.822	−21.333	0.696
	1700.00	58.994	215.969	123.728	106.459	156.809	−260.688	−8.235	−22.164	0.681

References

Phase	H / S	C_p
SOL	Hu1	e
LIQ	Tk1	e

211.883

DIALUMINIUM DISELENIDE (GAS) **Al2Se2**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	66.389	308.889	308.889	75.730	0.000	−16.365	75.730	25.694	−4.501
	300.00	66.444	309.299	308.890	75.853	0.123	−16.937	75.669	25.384	−4.420
	400.00	68.380	328.719	311.524	82.608	6.878	−48.880	72.075	9.147	−1.194
	500.00	69.285	344.086	316.554	89.496	13.766	−82.547	56.061	−5.942	0.621
	600.00	69.783	356.766	322.230	96.452	20.722	−117.608	50.477	−17.821	1.551
	700.00	70.090	367.548	327.953	103.446	27.716	−153.837	44.709	−28.751	2.145
	800.00	70.295	376.921	333.501	110.466	34.736	−191.071	38.696	−38.838	2.536
	900.00	70.440	385.210	338.795	117.503	41.773	−229.185	32.327	−48.152	2.795
	1000.00	70.549	392.637	343.814	124.553	48.823	−268.084	4.458	−55.217	2.884
	1100.00	70.633	399.365	348.563	131.612	55.882	−307.689	−108.485	−50.970	2.420
	1200.00	70.701	405.514	353.056	138.679	62.949	−347.938	−111.903	−45.590	1.984
	1300.00	70.758	411.176	357.312	145.752	70.022	−388.776	−115.292	−39.927	1.604
	1400.00	70.806	416.421	361.349	152.830	77.100	−430.159	−118.651	−34.003	1.269
	1500.00	70.848	421.308	365.185	159.913	84.183	−472.048	−121.981	−27.841	0.969
	1600.00	70.885	425.881	368.838	167.000	91.270	−514.410	−125.282	−21.457	0.700
	1700.00	70.919	430.180	372.321	174.090	98.360	−557.215	−128.554	−14.867	0.457
	1800.00	70.949	434.234	375.649	181.184	105.454	−600.438	−131.797	−8.086	0.235

References

Phase	H / S	C_p
GAS	Mi1	e

290.843

ALUMINIUM SELENIDE **Al2Se3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	117.967	154.808	154.808	−566.932	0.000	−613.088	−566.932	−558.430	97.835
	300.00	118.031	155.538	154.810	−566.714	0.218	−613.375	−566.945	−558.377	97.222
	400.00	121.462	189.963	159.481	−554.739	12.193	−630.724	−567.987	−555.383	72.526
	500.00	124.892	217.435	168.414	−542.421	24.511	−651.139	−587.382	−551.797	57.646
	600.00	128.323	240.509	178.557	−529.761	37.171	−674.066	−590.775	−544.359	47.391
	700.00	131.754	260.548	188.869	−516.757	50.175	−699.140	−594.048	−536.362	40.024
	800.00	135.185	278.365	198.962	−503.410	63.522	−726.102	−597.249	−527.903	34.469
	900.00	138.616	294.485	208.694	−489.720	77.212	−754.757	−600.479	−519.042	30.124
	1000.00	142.047	309.268	218.022	−475.687	91.245	−784.954	−624.880	−508.299	26.551
	1100.00	145.478	322.967	226.947	−461.310	105.622	−816.574	−787.331	−481.653	22.872
	1200.00	148.909	335.772	235.488	−446.591	120.341	−849.518	−785.165	−453.957	19.760
	1220.00	149.595	338.239	237.153	−443.606	123.326	−856.258	−784.686	−448.441	19.200

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	Mi1	Mi1	MPT= 1220.

AlTe[g] ALUMINIUM MONOTELLURIDE (GAS) 154.582

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	35.567	251.442	251.442	267.358	0.000	192.390	267.358	215.578	−37.768
	300.00	35.589	251.662	251.443	267.424	0.066	191.925	267.331	215.257	−37.480
	400.00	36.361	262.022	252.850	271.027	3.669	166.218	265.742	198.130	−25.873
	500.00	36.722	270.179	255.529	274.683	7.325	139.593	263.851	181.440	−18.955
	600.00	36.920	276.893	258.547	278.366	11.008	112.230	261.652	165.159	−14.378
	700.00	37.042	282.595	261.585	282.064	14.706	84.248	259.136	149.271	−11.139
	800.00	37.123	287.546	264.528	285.773	18.415	55.736	238.651	135.647	−8.857
	900.00	37.180	291.922	267.333	289.488	22.130	26.758	235.413	122.964	−7.137
	1000.00	37.222	295.842	269.992	293.208	25.850	−2.634	221.422	111.411	−5.820
	1100.00	37.255	299.391	272.505	296.932	29.574	−32.398	218.206	100.566	−4.775
	1200.00	37.281	302.634	274.883	300.659	33.301	−62.502	214.992	90.013	−3.918
	1300.00	37.303	305.619	277.134	304.388	37.030	−92.916	211.781	79.728	−3.204
	1400.00	37.321	308.384	279.269	308.120	40.762	−123.618	162.132	72.182	−2.693
	1500.00	37.337	310.959	281.296	311.852	44.494	−154.587	160.499	65.814	−2.292
	1600.00	37.351	313.370	283.226	315.587	48.229	−185.804	158.875	59.555	−1.944
	1700.00	37.363	315.634	285.067	319.323	51.965	−217.256	157.257	53.397	−1.641
	1800.00	37.375	317.770	286.825	323.060	55.702	−248.927	155.644	47.334	−1.374
	1900.00	37.385	319.791	288.507	326.798	59.440	−280.806	154.042	41.361	−1.137
	2000.00	37.395	321.709	290.120	330.537	63.179	−312.882	152.451	35.471	−0.926

References

Phase	H / S	C_p
GAS	Mi1	Mi1

Al2Te3 ALUMINIUM TELLURIDE 436.763

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	121.230	175.728	175.728	−318.821	0.000	−371.214	−318.821	−310.082	54.325
	300.00	121.294	176.478	175.730	−318.597	0.224	−371.540	−318.829	−310.027	53.981
	400.00	124.767	211.848	180.529	−306.294	12.527	−391.033	−319.596	−306.995	40.089
	500.00	128.240	240.062	189.706	−293.643	25.178	−413.674	−320.946	−303.700	31.727
	600.00	131.712	263.750	200.124	−280.646	38.175	−438.895	−322.840	−300.081	26.124
	700.00	135.185	284.314	210.714	−267.301	51.520	−466.321	−325.273	−296.104	22.096
	800.00	138.658	302.592	221.077	−253.609	65.212	−495.682	−381.157	−286.098	18.680
	900.00	142.130	319.124	231.067	−239.569	79.252	−526.781	−384.791	−273.998	15.902
	1000.00	145.603	334.279	240.640	−225.183	93.638	−559.461	−409.591	−259.972	13.580
	1100.00	149.076	348.319	249.799	−210.449	108.372	−593.600	−412.503	−244.867	11.628
	1170.00	151.507	357.590	255.973	−199.928	118.893	−618.309	−414.335	−234.141	10.453

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	e	Mi1	MPT= 1170.

312.983

3–ALUMINIUM THORIUM

Al3Th

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	104.408	97.069	97.069	–111.713	0.000	–140.654	–111.713	–99.446	17.423
	300.00	104.433	97.715	97.071	–111.520	0.193	–140.834	–111.705	–99.370	17.302
	400.00	105.772	127.941	101.183	–101.010	10.703	–152.186	–111.516	–95.298	12.445
	500.00	107.110	151.688	108.993	–90.366	21.347	–166.209	–111.723	–91.228	9.530
	600.00	108.449	171.334	117.792	–79.588	32.125	–182.388	–112.265	–87.083	7.581
	700.00	109.788	188.153	126.671	–68.676	43.037	–200.382	–113.136	–82.822	6.180
	800.00	111.127	202.900	135.296	–57.630	54.083	–219.950	–114.406	–78.410	5.120
	900.00	112.466	216.066	143.552	–46.450	65.263	–240.910	–116.228	–73.808	4.284
	1000.00	113.805	227.985	151.409	–35.137	76.576	–263.122	–150.313	–66.693	3.484
	1100.00	115.144	238.895	158.873	–23.689	88.024	–286.473	–152.081	–58.245	2.766
	1200.00	116.483	248.971	165.967	–12.108	99.605	–310.873	–153.843	–49.636	2.161
	1300.00	117.821	258.347	172.716	–0.393	111.320	–336.244	–155.598	–40.881	1.643
	1400.00	119.160	267.128	179.150	11.456	123.169	–362.523	–157.346	–31.991	1.194

References

Phase	H / S	C_p
SOL	Ku1	e

74.862

ALUMINIUM TITANIUM

AlTi

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	49.239	52.300	52.300	–75.312	0.000	–90.905	–75.312	–73.304	12.843
	300.00	49.354	52.605	52.301	–75.221	0.091	–91.002	–75.312	–73.292	12.761
	400.00	53.610	67.462	54.298	–70.046	5.266	–97.031	–75.233	–72.627	9.484
	500.00	55.898	79.691	58.190	–64.562	10.750	–104.407	–75.090	–71.991	7.521
	600.00	57.413	90.024	62.657	–58.892	16.420	–112.906	–74.960	–71.384	6.215
	700.00	58.562	98.964	67.220	–53.091	22.221	–122.366	–74.899	–70.794	5.283
	800.00	59.516	106.848	71.690	–47.186	28.126	–132.664	–74.967	–70.205	4.584
	900.00	60.357	113.907	75.995	–41.191	34.121	–143.708	–75.241	–69.596	4.039
	1000.00	61.128	120.307	80.111	–35.117	40.195	–155.423	–86.306	–68.185	3.562
	1100.00	61.853	126.167	84.036	–28.967	46.345	–167.751	–86.637	–66.357	3.151
	1200.00	62.547	131.579	87.775	–22.747	52.565	–180.642	–91.003	–64.378	2.802
	1300.00	63.218	136.612	91.340	–16.459	58.853	–194.054	–90.876	–62.165	2.498
	1400.00	63.874	141.321	94.744	–10.104	65.208	–207.954	–90.745	–59.961	2.237
	1500.00	64.517	145.750	97.998	–3.684	71.628	–222.309	–90.618	–57.767	2.012
	1600.00	65.152	149.934	101.115	2.799	78.111	–237.095	–90.503	–55.580	1.815
	1700.00	65.780	153.903	104.104	9.346	84.658	–252.289	–90.409	–53.401	1.641
	1733.00	65.986	155.169	105.064	11.520	86.832	–257.389	–90.384	–52.682	1.588

References

Phase	H / S	C_p	Remarks	
SOL	Tk1/Ku1	e	Tk1	DPT= 1733. (LIQ + Ti)

Al3Ti — 3–ALUMINIUM TITANIUM — 128.825

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	98.885	92.383	92.383	−146.440	0.000	−173.984	−146.440	−139.523	24.444
	300.00	99.040	92.995	92.385	−146.257	0.183	−174.155	−146.438	−139.480	24.286
	400.00	105.086	122.405	96.353	−136.019	10.421	−184.981	−146.310	−137.179	17.914
	500.00	108.784	146.277	104.026	−125.315	21.125	−198.453	−146.228	−134.907	14.094
	600.00	111.557	166.365	112.786	−114.293	32.147	−214.111	−146.256	−132.643	11.548
	700.00	113.894	183.741	121.708	−103.017	43.423	−231.636	−146.454	−130.361	9.728
	800.00	115.997	199.088	130.440	−91.521	54.919	−250.792	−146.935	−128.034	8.360
	900.00	117.966	212.866	138.846	−79.822	66.618	−271.401	−147.882	−125.620	7.291
	1000.00	119.851	225.393	146.884	−67.931	78.509	−293.324	−181.020	−120.795	6.310
	1100.00	121.680	236.902	154.551	−55.854	90.586	−316.446	−181.773	−114.735	5.448
	1200.00	123.473	247.566	161.863	−43.596	102.844	−340.676	−186.451	−108.491	4.723
	1300.00	125.239	257.519	168.843	−31.160	115.280	−365.936	−186.526	−101.991	4.098
	1400.00	126.986	266.865	175.514	−18.549	127.891	−392.160	−186.488	−95.489	3.563
	1500.00	128.718	275.685	181.901	−5.764	140.676	−419.291	−186.345	−88.993	3.099
	1600.00	130.440	284.047	188.026	7.194	153.634	−447.281	−186.106	−82.511	2.694
	1613.00	130.664	285.104	188.804	8.891	155.331	−450.981	−186.068	−81.669	2.645

References

Phase	H / S	C_p	Remarks
SOL	Tk1	e	Tk1 DPT= 1613. (LIQ + TiAl)

Al2U — 2–ALUMINIUM URANIUM — 291.992

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	78.431	106.692	106.692	−92.006	0.000	−123.816	−92.006	−91.961	16.111
	300.00	78.450	107.177	106.693	−91.861	0.145	−124.014	−92.002	−91.961	16.012
	400.00	79.496	129.889	109.783	−83.964	8.042	−135.919	−91.987	−91.960	12.009
	500.00	80.542	147.741	115.652	−75.962	16.044	−149.832	−92.349	−91.920	9.603
	600.00	81.588	162.518	122.266	−67.855	24.151	−165.366	−93.086	−91.771	7.989
	700.00	82.634	175.173	128.942	−59.644	32.362	−182.265	−94.243	−91.467	6.825
	800.00	83.680	186.275	135.428	−51.328	40.678	−200.349	−95.917	−90.963	5.939
	900.00	84.726	196.192	141.639	−42.908	49.098	−219.481	−98.263	−90.211	5.236
	1000.00	85.772	205.173	147.550	−34.383	57.623	−239.556	−124.880	−87.474	4.569
	1100.00	86.818	213.397	153.167	−25.754	66.252	−260.490	−131.409	−83.405	3.961
	1200.00	87.864	220.996	158.507	−17.020	74.986	−282.215	−132.853	−78.977	3.438
	1300.00	88.910	228.070	163.589	−8.181	83.825	−304.672	−134.192	−74.432	2.991
	1400.00	89.956	234.697	168.434	0.762	92.768	−327.814	−135.427	−69.788	2.604
	1500.00	91.002	240.939	173.062	9.810	101.816	−351.598	−145.990	−64.453	2.244
	1600.00	92.048	246.846	177.490	18.963	110.969	−375.990	−147.978	−58.952	1.925
	1700.00	93.094	252.457	181.736	28.220	120.226	−400.958	−149.861	−53.330	1.639
	1800.00	94.140	257.808	185.815	37.582	129.588	−426.473	−151.639	−47.600	1.381

References

Phase	H / S	C_p
SOL	Nb1/Ra1	e

318.974

3–ALUMINIUM URANIUM

Al3U

Phase	T	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[———	J / (K mol)	———]	[———		kJ / mol	———	———]	[–]
SOL	298.15	104.408	135.980	135.980	–104.600	0.000	–145.142	–104.600	–104.857	18.371
	300.00	104.433	136.626	135.982	–104.407	0.193	–145.395	–104.593	–104.859	18.258
	400.00	105.772	166.853	140.094	–93.897	10.703	–160.638	–104.471	–104.980	13.709
	500.00	107.110	190.599	147.904	–83.253	21.347	–178.552	–104.832	–105.075	10.977
	600.00	108.449	210.246	156.703	–72.475	32.125	–198.622	–105.653	–105.054	9.146
	700.00	109.788	227.064	165.582	–61.563	43.037	–220.507	–106.976	–104.857	7.825
	800.00	111.127	241.811	174.207	–50.517	54.083	–243.966	–108.922	–104.430	6.819
	900.00	112.466	254.977	182.463	–39.337	65.263	–268.817	–111.697	–103.712	6.019
	1000.00	113.805	266.896	190.320	–28.024	76.576	–294.920	–149.471	–100.193	5.234
	1100.00	115.144	277.806	197.784	–16.576	88.024	–322.163	–156.356	–94.920	4.507
	1200.00	116.483	287.882	204.878	–4.995	99.605	–350.453	–158.127	–89.255	3.885
	1300.00	117.821	297.258	211.627	6.720	111.320	–379.716	–159.765	–83.449	3.353
	1400.00	119.160	306.039	218.061	18.569	123.169	–409.885	–161.269	–77.521	2.892
	1500.00	120.499	314.306	224.204	30.552	135.152	–440.906	–172.072	–70.884	2.468
	1600.00	121.838	322.125	230.082	42.669	147.269	–472.731	–174.270	–64.066	2.092

References

Phase	H / S	C_p
SOL	Nb1/Ra1	e

345.955

4–ALUMINIUM URANIUM

Al4U

Phase	T	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[———	J / (K mol)	———]	[———		kJ / mol	———	———]	[–]
SOL	298.15	129.224	163.176	163.176	–129.997	0.000	–178.648	–129.997	–129.933	22.764
	300.00	129.286	163.976	163.178	–129.758	0.239	–178.951	–129.989	–129.932	22.623
	400.00	132.633	201.627	168.289	–116.662	13.335	–197.313	–129.788	–129.956	16.971
	500.00	135.980	231.583	178.051	–103.231	26.766	–219.023	–130.004	–129.981	13.579
	600.00	139.327	256.671	189.119	–89.466	40.531	–243.468	–130.592	–129.927	11.311
	700.00	142.674	278.400	200.355	–75.366	54.631	–270.246	–131.594	–129.744	9.682
	800.00	146.022	297.670	211.337	–60.931	69.066	–299.067	–133.153	–129.381	8.448
	900.00	149.369	315.062	221.911	–46.162	83.835	–329.717	–135.526	–128.777	7.474
	1000.00	152.716	330.972	232.033	–31.057	98.940	–362.030	–183.454	–124.658	6.511

References

Phase	H / S	C_p
SOL	Ku1	e

Am AMERICIUM 243.061

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL–A	298.15	25.852	54.488	54.488	0.000	0.000	–16.246	0.000	0.000	0.000
	300.00	25.874	54.648	54.489	0.048	0.048	–16.347	0.000	0.000	0.000
	400.00	27.149	62.264	55.519	2.698	2.698	–22.207	0.000	0.000	0.000
	500.00	28.474	68.464	57.506	5.479	5.479	–28.753	0.000	0.000	0.000
	600.00	29.818	73.774	59.785	8.394	8.394	–35.871	0.000	0.000	0.000
	700.00	31.172	78.472	62.125	11.443	11.443	–43.487	0.000	0.000	0.000
	800.00	32.531	82.724	64.438	14.628	14.628	–51.551	0.000	0.000	0.000
	900.00	33.893	86.634	66.690	17.950	17.950	–60.021	0.000	0.000	0.000
	923.00	34.207	87.493	67.198	18.733	18.733	–62.023	0.000	0.000	0.000
			0.839		0.774					
SOL–B	923.00	31.956	88.332	67.198	19.507	19.507	–62.023	0.000	0.000	0.000
	1000.00	33.018	90.934	68.926	22.008	22.008	–68.926	0.000	0.000	0.000
	1100.00	34.501	94.149	71.074	25.383	25.383	–78.181	0.000	0.000	0.000
	1200.00	36.068	97.218	73.126	28.911	28.911	–87.751	0.000	0.000	0.000
	1300.00	37.693	100.169	75.093	32.598	32.598	–97.621	0.000	0.000	0.000
	1350.00	38.522	101.607	76.049	34.504	34.504	–102.666	0.000	0.000	0.000
			4.339		5.858					
SOL–C	1350.00	39.748	105.946	76.049	40.362	40.362	–102.666	0.000	0.000	0.000
	1400.00	39.748	107.392	77.142	42.349	42.349	–107.999	0.000	0.000	0.000
	1449.00	39.748	108.759	78.188	44.297	44.297	–113.295	0.000	0.000	0.000
			9.933		14.393					
LIQ	1449.00	41.840	118.692	78.188	58.690	58.690	–113.295	0.000	0.000	0.000
	1500.00	41.840	120.139	79.590	60.824	60.824	–119.386	0.000	0.000	0.000
	1600.00	41.840	122.840	82.210	65.008	65.008	–131.536	0.000	0.000	0.000
	1700.00	41.840	125.376	84.675	69.192	69.192	–143.948	0.000	0.000	0.000
	1800.00	41.840	127.768	87.004	73.376	73.376	–156.606	0.000	0.000	0.000
	1900.00	41.840	130.030	89.209	77.560	77.560	–169.497	0.000	0.000	0.000
	2000.00	41.840	132.176	91.304	81.744	81.744	–182.608	0.000	0.000	0.000

References

Phase	H / S	C_p
SOL–A	Oe2	Oe2
SOL–B	Pa1	Oe2
SOL–C	Pa1	Oe2
LIQ	Pa1	Oe2

243.061

AMERICIUM (GAS)

Am[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	20.786	194.552	194.552	284.094	0.000	226.088	284.094	242.334	−42.456
	300.00	20.786	194.681	194.553	284.132	0.038	225.728	284.085	242.075	−42.149
	400.00	20.786	200.661	195.368	286.211	2.117	205.947	283.513	228.154	−29.794
	500.00	20.786	205.299	196.908	288.290	4.196	185.640	282.810	214.393	−22.397
	600.00	20.786	209.089	198.632	290.368	6.274	164.915	281.975	200.786	−17.480
	700.00	20.786	212.293	200.360	292.447	8.353	143.842	281.004	187.329	−13.979
	800.00	20.786	215.069	202.029	294.526	10.432	122.471	279.897	174.021	−11.362
	900.00	20.786	217.517	203.617	296.604	12.510	100.839	278.655	160.860	−9.336
	1000.00	20.786	219.707	205.118	298.683	14.589	78.976	276.675	147.902	−7.726
	1100.00	20.786	221.688	206.536	300.761	16.667	56.904	275.378	135.086	−6.415
	1200.00	20.786	223.497	207.875	302.840	18.746	34.644	273.929	122.395	−5.328
	1300.00	20.786	225.161	209.142	304.919	20.825	12.210	272.320	109.831	−4.413
	1400.00	20.786	226.701	210.342	306.997	22.903	−10.384	264.648	97.615	−3.642
	1500.00	20.786	228.135	211.481	309.076	24.982	−33.127	248.252	86.259	−3.004
	1600.00	20.786	229.477	212.564	311.154	27.060	−56.008	246.147	75.528	−2.466
	1700.00	20.786	230.737	213.596	313.233	29.139	−79.019	244.041	64.929	−1.995
	1800.00	20.786	231.925	214.582	315.312	31.218	−102.153	241.936	54.453	−1.580
	1900.00	20.786	233.049	215.524	317.390	33.296	−125.402	239.831	44.095	−1.212
	2000.00	20.786	234.115	216.427	319.469	35.375	−148.761	237.725	33.848	−0.884
	2100.00	20.786	235.129	217.294	321.547	37.453	−172.223	235.620	23.706	−0.590
	2200.00	20.786	236.096	218.127	323.626	39.532	−195.785	233.515	13.664	−0.324
	2300.00	20.786	237.020	218.928	325.705	41.611	−219.441	231.409	3.718	−0.084
	2400.00	20.786	237.905	219.701	327.783	43.689	−243.188	229.304	−6.137	0.134
	2500.00	20.786	238.753	220.446	329.862	45.768	−267.021	227.198	−15.904	0.332
	2600.00	20.786	239.568	221.166	331.941	47.847	−290.937	225.093	−25.586	0.514
	2700.00	20.786	240.353	221.862	334.019	49.925	−314.934	222.988	−35.188	0.681
	2800.00	20.786	241.109	222.536	336 098	52.004	−339.007	220.882	−44.711	0.834
	2900.00	20.786	241.838	223.189	338.176	54.082	−363.154	218.777	−54.159	0.976
	3000.00	20.786	242.543	223.823	340.255	56.161	−387.374	216.671	−63.535	1.106

References

Phase	H / S	C_p
GAS	Oe2	Oe2

Ar[g] ARGON (GAS) 39.948

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	20.786	154.845	154.845	0.000	0.000	−46.167	0.000	0.000	0.000
	300.00	20.786	154.974	154.845	0.038	0.038	−46.454	0.000	0.000	0.000
	400.00	20.786	160.953	155.661	2.117	2.117	−62.264	0.000	0.000	0.000
	500.00	20.786	165.592	157.200	4.196	4.196	−78.600	0.000	0.000	0.000
	600.00	20.786	169.381	158.924	6.274	6.274	−95.355	0.000	0.000	0.000
	700.00	20.786	172.586	160.653	8.353	8.353	−112.457	0.000	0.000	0.000
	800.00	20.786	175.361	162.322	10.431	10.431	−129.857	0.000	0.000	0.000
	900.00	20.786	177.809	163.909	12.510	12.510	−147.518	0.000	0.000	0.000
	1000.00	20.786	179.999	165.411	14.589	14.589	−165.411	0.000	0.000	0.000
	1100.00	20.786	181.980	166.828	16.667	16.667	−183.511	0.000	0.000	0.000
	1200.00	20.786	183.789	168.168	18.746	18.746	−201.801	0.000	0.000	0.000
	1300.00	20.786	185.453	169.434	20.824	20.824	−220.264	0.000	0.000	0.000
	1400.00	20.786	186.993	170.634	22.903	22.903	−238.888	0.000	0.000	0.000
	1500.00	20.786	188.427	171.773	24.982	24.982	−257.659	0.000	0.000	0.000
	1600.00	20.786	189.769	172.856	27.060	27.060	−276.570	0.000	0.000	0.000
	1700.00	20.786	191.029	173.888	29.139	29.139	−295.610	0.000	0.000	0.000
	1800.00	20.786	192.217	174.874	31.217	31.217	−314.773	0.000	0.000	0.000
	1900.00	20.786	193.341	175.817	33.296	33.296	−334.052	0.000	0.000	0.000
	2000.00	20.786	194.407	176.720	35.375	35.375	−353.440	0.000	0.000	0.000
	2100.00	20.786	195.421	177.586	37.453	37.453	−372.931	0.000	0.000	0.000
	2200.00	20.786	196.388	178.419	39.532	39.532	−392.522	0.000	0.000	0.000
	2300.00	20.786	197.312	179.221	41.610	41.610	−412.208	0.000	0.000	0.000
	2400.00	20.786	198.197	179.993	43.689	43.689	−431.983	0.000	0.000	0.000
	2500.00	20.786	199.045	180.738	45.768	45.768	−451.846	0.000	0.000	0.000
	2600.00	20.786	199.861	181.458	47.846	47.846	−471.791	0.000	0.000	0.000
	2700.00	20.786	200.645	182.154	49.925	49.925	−491.817	0.000	0.000	0.000
	2800.00	20.786	201.401	182.828	52.003	52.003	−511.919	0.000	0.000	0.000
	2900.00	20.786	202.130	183.481	54.082	54.082	−532.096	0.000	0.000	0.000
	3000.00	20.786	202.835	184.115	56.161	56.161	−552.345	0.000	0.000	0.000
	3100.00	20.786	203.517	184.730	58.239	58.239	−572.662	0.000	0.000	0.000
	3200.00	20.786	204.177	185.327	60.318	60.318	−593.047	0.000	0.000	0.000
	3300.00	20.786	204.816	185.908	62.396	62.396	−613.497	0.000	0.000	0.000
	3400.00	20.786	205.437	186.474	64.475	64.475	−634.010	0.000	0.000	0.000
	3500.00	20.786	206.039	187.024	66.554	66.554	−654.584	0.000	0.000	0.000
	3600.00	20.786	206.625	187.560	68.632	68.632	−675.217	0.000	0.000	0.000
	3700.00	20.786	207.194	188.083	70.711	70.711	−695.908	0.000	0.000	0.000
	3800.00	20.786	207.749	188.594	72.789	72.789	−716.656	0.000	0.000	0.000
	3900.00	20.786	208.289	189.092	74.868	74.868	−737.458	0.000	0.000	0.000
	4000.00	20.786	208.815	189.578	76.947	76.947	−758.313	0.000	0.000	0.000
	4100.00	20.786	209.328	190.054	79.025	79.025	−779.220	0.000	0.000	0.000
	4200.00	20.786	209.829	190.519	81.104	81.104	−800.178	0.000	0.000	0.000
	4300.00	20.786	210.318	190.973	83.182	83.182	−821.185	0.000	0.000	0.000
	4400.00	20.786	210.796	191.418	85.261	85.261	−842.241	0.000	0.000	0.000
	4500.00	20.786	211.263	191.854	87.340	87.340	−863.344	0.000	0.000	0.000
	4600.00	20.786	211.720	192.281	89.418	89.418	−884.494	0.000	0.000	0.000
	4700.00	20.786	212.167	192.700	91.497	91.497	−905.688	0.000	0.000	0.000
	4800.00	20.786	212.605	193.110	93.575	93.575	−926.927	0.000	0.000	0.000
	4900.00	20.786	213.033	193.512	95.654	95.654	−948.209	0.000	0.000	0.000
	5000.00	20.786	213.453	193.907	97.733	97.733	−969.533	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Ja2	Ja2

74.922

ARSENIC

As

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL−A	298.15	24.652	35.706	35.706	0.000	0.000	−10.646	0.000	0.000	0.000
	300.00	24.671	35.859	35.707	0.046	0.046	−10.712	0.000	0.000	0.000
	400.00	25.388	43.065	36.684	2.552	2.552	−14.674	0.000	0.000	0.000
	500.00	25.945	48.790	38.552	5.119	5.119	−19.276	0.000	0.000	0.000
	600.00	26.501	53.569	40.667	7.741	7.741	−24.400	0.000	0.000	0.000
	700.00	27.054	57.696	42.812	10.419	10.419	−29.968	0.000	0.000	0.000
	800.00	27.580	61.344	44.905	13.151	13.151	−35.924	0.000	0.000	0.000
	900.00	28.032	64.620	46.916	15.934	15.934	−42.225	0.000	0.000	0.000
	1000.00	28.166	67.581	48.837	18.743	18.743	−48.837	0.000	0.000	0.000
	1100.00	28.722	70.285	50.666	21.581	21.581	−55.732	0.000	0.000	0.000
	1200.00	30.582	72.851	52.408	24.531	24.531	−62.890	0.000	0.000	0.000
	1300.00	34.591	75.440	54.079	27.769	27.769	−70.303	0.000	0.000	0.000
	1400.00	41.515	78.237	55.703	31.547	31.547	−77.985	0.000	0.000	0.000
	1407.00	42.127	78.445	55.816	31.840	31.840	−78.533	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks
SOL−A	Hu1	Hu1	Hu1,e SPT= 1407.GAS(As2),L= 34.8 kJ/876.,(As4)/MPT= 1081.(hyp.)

74.922

ARSENIC (GAS)

As[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
GAS	298.15	20.786	174.210	174.210	301.750	0.000	249.809	301.750	260.455	−45.631
	300.00	20.786	174.338	174.210	301.788	0.038	249.487	301.743	260.199	−45.305
	400.00	20.786	180.318	175.026	303.867	2.117	231.740	301.315	246.414	−32.178
	500.00	20.786	184.957	176.565	305.946	4.196	213.467	300.827	232.744	−24.315
	600.00	20.786	188.746	178.289	308.024	6.274	194.777	300.283	219.177	−19.081
	700.00	20.786	191.951	180.018	310.103	8.353	175.738	299.684	205.706	−15.350
	800.00	20.786	194.726	181.687	312.182	10.432	156.401	299.030	192.324	−12.557
	900.00	20.786	197.174	183.274	314.260	12.510	136.803	298.327	179.028	−10.391
	1000.00	20.786	199.364	184.776	316.339	14.589	116.974	297.595	165.812	−8.661
	1100.00	20.786	201.346	186.193	318.417	16.667	96.937	296.837	152.670	−7.250
	1200.00	20.786	203.154	187.533	320.496	18.746	76.711	295.965	139.601	−6.077

References

Phase	H / S	C_p
GAS	Hu1	Hu1

As2[g] ARSENIC (GAS) 149.843

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	34.971	240.882	240.882	220.999	0.000	149.180	220.999	170.472	−29.866
	300.00	35.000	241.098	240.883	221.064	0.065	148.734	220.972	170.158	−29.627
	400.00	35.997	251.324	242.270	224.621	3.622	124.091	219.516	153.439	−20.037
	500.00	36.467	259.413	244.918	228.246	7.247	98.540	218.009	137.092	−14.322
	600.00	36.729	266.087	247.906	231.907	10.908	72.255	216.425	121.056	−10.539
	700.00	36.893	271.762	250.919	235.589	14.590	45.356	214.751	105.293	−7.857
	800.00	37.005	276.696	253.839	239.284	18.285	17.928	212.982	89.775	−5.862
	900.00	37.086	281.059	256.626	242.989	21.990	−9.964	211.122	74.485	−4.323
	1000.00	37.148	284.970	259.268	246.701	25.702	−38.269	209.214	59.406	−3.103
	1100.00	37.199	288.513	261.768	250.418	29.419	−66.946	207.257	44.519	−2.114
	1200.00	37.240	291.751	264.134	254.140	33.141	−95.962	205.077	29.818	−1.298
	1300.00	37.276	294.734	266.374	257.866	36.867	−125.288	202.328	15.319	−0.616
	1400.00	37.308	297.497	268.500	261.595	40.596	−154.901	198.502	1.068	−0.040
	1500.00	37.336	300.072	270.520	265.327	44.328	−184.781	0.000	0.000	0.000
	1600.00	37.362	302.483	272.443	269.062	48.063	−214.910	0.000	0.000	0.000
	1700.00	37.386	304.749	274.277	272.800	51.801	−245.273	0.000	0.000	0.000
	1800.00	37.409	306.886	276.030	276.540	55.541	−275.855	0.000	0.000	0.000
	1900.00	37.430	308.909	277.708	280.281	59.282	−306.646	0.000	0.000	0.000
	2000.00	37.451	310.830	279.316	284.026	63.027	−337.634	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1

As3[g] ARSENIC (GAS) 224.765

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	59.039	310.232	310.232	261.421	0.000	168.925	261.421	200.863	−35.190
	300.00	59.077	310.597	310.233	261.530	0.109	168.351	261.393	200.487	−34.908
	400.00	60.444	327.807	312.570	267.516	6.095	136.393	259.860	180.414	−23.560
	500.00	61.087	341.372	317.022	273.596	12.175	102.910	258.239	160.738	−16.792
	600.00	61.446	352.544	322.039	279.724	18.303	68.198	256.501	141.399	−12.310
	700.00	61.670	362.034	327.091	285.881	24.460	32.457	254.624	122.362	−9.131
	800.00	61.823	370.279	331.986	292.056	30.635	−4.168	252.603	103.604	−6.765
	900.00	61.934	377.568	336.653	298.244	36.823	−41.567	250.443	85.107	−4.939
	1000.00	62.019	384.098	341.077	304.442	43.021	−79.656	248.211	66.856	−3.492
	1100.00	62.087	390.012	345.261	310.647	49.226	−118.366	245.905	48.831	−2.319
	1200.00	62.143	395.417	349.219	316.859	55.438	−157.641	243.264	31.027	−1.351

References

Phase	H / S	C_p
GAS	Hu1	Hu1

299.686

ARSENIC (GAS) **As4**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	77.208	327.432	327.432	153.302	0.000	55.678	153.302	98.261	−17.215
	300.00	77.279	327.910	327.434	153.445	0.143	55.072	153.262	97.920	−17.049
	400.00	79.785	350.536	330.501	161.316	8.014	21.101	151.108	79.796	−10.420
	500.00	80.952	368.480	336.365	169.359	16.057	−14.881	148.884	62.224	−6.500
	600.00	81.592	383.301	342.989	177.489	24.187	−52.491	146.525	45.111	−3.927
	700.00	81.983	395.910	349.670	185.670	32.368	−91.467	143.993	28.406	−2.120
	800.00	82.242	406.875	356.151	193.882	40.580	−131.619	141.277	12.077	−0.789
	900.00	82.423	416.573	362.336	202.115	48.813	−172.800	138.381	−3.901	0.226
	1000.00	82.556	425.264	368.202	210.365	57.063	−214.900	135.391	−19.550	1.021
	1100.00	82.658	433.138	373.753	218.626	65.324	−257.826	132.303	−34.897	1.657
	1200.00	82.739	440.333	379.005	226.896	73.594	−301.505	128.770	−49.946	2.174

References

Phase	H / S	C_p
GAS	Hu1	Hu1

314.634

ARSENIC BROMIDE (GAS) **AsBr3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	78.992	363.992	363.992	−129.997	0.000	−238.521	−129.997	−159.803	27.997
	300.00	79.041	364.481	363.993	−129.851	0.146	−239.195	−130.106	−159.988	27.856
	400.00	80.777	387.492	367.119	−121.848	8.149	−276.845	−176.333	−160.446	20.952
	500.00	81.593	405.615	373.070	−113.725	16.272	−316.532	−176.315	−156.477	16.347
	600.00	82.047	420.535	379.774	−105.541	24.456	−357.862	−176.331	−152.508	13.277
	700.00	82.330	433.205	386.525	−97.321	32.676	−400.564	−176.392	−148.534	11.084
	800.00	82.522	444.212	393.063	−89.078	40.919	−444.447	−176.502	−144.547	9.438
	900.00	82.661	453.940	399.297	−80.818	49.179	−489.364	−176.661	−140.544	8.157
	1000.00	82.767	462.655	405.205	−72.547	57.450	−535.202	−176.848	−136.521	7.131
	1100.00	82.852	470.548	410.792	−64.266	65.731	−581.868	−177.064	−132.478	6.291
	1200.00	82.922	477.760	416.076	−55.977	74.020	−629.289	−177.395	−128.412	5.590
	1300.00	82.981	484.399	421.080	−47.682	82.315	−677.401	−178.015	−124.307	4.995
	1400.00	83.033	490.551	425.825	−39.381	90.616	−726.152	−179.180	−120.137	4.482
	1500.00	83.080	496.281	430.333	−31.075	98.922	−775.497	−277.687	−109.428	3.811

References

Phase	H / S	C_p	Remarks	
GAS	Nb1	Pa2	Tk1	AsBr3: MPT= 304.,/BPT= 434.

AsCl3 ARSENIC CHLORIDE 181.280

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
LIQ	298.15	133.470	216.313	216.313	−305.014	0.000	−369.508	−305.014	−259.079	45.389
	300.00	133.470	217.138	216.315	−304.767	0.247	−369.909	−304.907	−258.794	45.060
	400.00	133.470	255.535	221.551	−291.420	13.594	−393.634	−299.267	−244.280	31.900

References

Phase	H / S	C_p
LIQ	Nb1	Tk1

AsCl3[g] ARSENIC CHLORIDE (GAS) 181.280

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	75.395	327.298	327.298	−261.500	0.000	−359.084	−261.500	−248.655	43.563
	300.00	75.483	327.765	327.300	−261.360	0.140	−359.690	−261.500	−248.575	43.281
	400.00	78.598	349.969	330.306	−253.635	7.865	−393.622	−261.482	−244.268	31.898
	500.00	80.090	367.685	336.070	−245.693	15.807	−429.535	−261.463	−239.968	25.069
	600.00	80.944	382.369	342.598	−237.638	23.862	−467.059	−261.483	−235.668	20.517
	700.00	81.497	394.891	349.196	−229.514	31.986	−505.937	−261.552	−231.360	17.264
	800.00	81.888	405.800	355.604	−221.344	40.156	−545.983	−261.672	−227.040	14.824
	900.00	82.187	415.463	361.729	−213.139	48.361	−587.056	−261.838	−222.701	12.925
	1000.00	82.427	424.135	367.543	−204.908	56.592	−629.043	−262.029	−218.342	11.405
	1100.00	82.629	432.001	373.051	−196.655	64.845	−671.856	−262.244	−213.964	10.160
	1200.00	82.806	439.198	378.267	−188.383	73.117	−715.421	−262.569	−209.561	9.122
	1300.00	82.964	445.833	383.213	−180.094	81.406	−759.677	−263.177	−205.122	8.242
	1400.00	83.109	451.986	387.908	−171.791	89.709	−804.571	−264.323	−200.618	7.485
	1500.00	83.245	457.725	392.374	−163.473	98.027	−850.060	−362.805	−189.577	6.602

References

Phase	H / S	C_p
GAS	Nb1	Pa2

131.917

ARSENIC FLUORIDE **AsF3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
LIQ	298.15	126.549	181.209	181.209	−821.319	0.000	−875.346	−821.319	−774.006	135.603
	300.00	126.650	181.992	181.211	−821.085	0.234	−875.682	−821.217	−773.712	134.715
	330.00	128.281	194.140	181.842	−817.261	4.058	−881.327	−819.558	−769.042	121.729

References

Phase	H / S	C_p	Remarks
LIQ	Nb1	R1	Tk1,e BPT= 330., L= 33,47 kJ

131.917

ARSENIC FLUORIDE (GAS) **AsF3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	64.684	289.224	289.224	−785.755	0.000	−871.987	−785.755	−770.646	135.014
	300.00	64.856	289.624	289.225	−785.635	0.120	−872.523	−785.768	−770.552	134.165
	400.00	71.139	309.258	291.859	−778.796	6.959	−902.499	−786.255	−765.399	99.951
	500.00	74.429	325.517	297.013	−771.503	14.252	−934.262	−786.574	−760.146	79.412
	600.00	76.541	339.286	302.941	−763.948	21.807	−967.519	−786.851	−754.834	65.714
	700.00	78.096	351.206	309.003	−756.213	29.542	−1002.057	−787.119	−749.477	55.927
	800.00	79.355	361.719	314.949	−748.339	37.416	−1037.714	−787.385	−744.082	48.584
	900.00	80.441	371.130	320.677	−740.348	45.407	−1074.365	−787.649	−738.653	42.870
	1000.00	81.421	379.657	326.156	−732.254	53.501	−1111.911	−787.885	−733.196	38.298
	1100.00	82.330	387.460	331.379	−724.066	61.689	−1150.272	−788.094	−727.717	34.556
	1200.00	83.192	394.661	336.356	−715.789	69.966	−1189.382	−788.361	−722.217	31.437
	1300.00	84.020	401.353	341.102	−707.429	78.326	−1229.187	−788.857	−716.687	28.797
	1400.00	84.824	407.609	345.631	−698.986	86.769	−1269.639	−789.837	−711.103	26.532
	1500.00	85.610	413.488	349.961	−690.464	95.291	−1310.696	−888.098	−698.996	24.341

References

Phase	H / S	C_p
GAS	Nb1	Pa2

AsF5[g] ARSENIC PENTAFLUORIDE (GAS) 169.914

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	97.541	317.257	317.257	–1236.790	0.000	–1331.380	–1236.790	–1169.576	204.905
	300.00	97.952	317.861	317.258	–1236.609	0.181	–1331.968	–1236.800	–1169.159	203.569
	400.00	112.393	348.316	321.313	–1225.989	10.801	–1365.315	–1236.720	–1146.598	149.730
	500.00	119.077	374.196	329.373	–1214.378	22.412	–1401.476	–1236.084	–1124.135	117.438
	600.00	122.707	396.258	338.728	–1202.272	34.518	–1440.027	–1235.283	–1101.819	95.922
	700.00	124.897	415.350	348.342	–1189.884	46.906	–1480.629	–1234.448	–1079.641	80.564
	800.00	126.318	432.127	357.788	–1177.318	59.472	–1523.020	–1233.629	–1057.582	69.053
	900.00	127.292	447.065	366.893	–1164.635	72.155	–1566.993	–1232.848	–1035.623	60.106
	1000.00	127.989	460.514	375.594	–1151.869	84.921	–1612.384	–1232.093	–1013.750	52.953
	1100.00	128.504	472.738	383.878	–1139.043	97.747	–1659.055	–1231.370	–991.952	47.104
	1200.00	128.896	483.937	391.756	–1126.172	110.618	–1706.897	–1230.770	–970.214	42.232
	1300.00	129.201	494.267	399.249	–1113.267	123.523	–1755.814	–1230.469	–948.516	38.112
	1400.00	129.444	503.851	406.383	–1100.334	136.456	–1805.726	–1230.721	–926.823	34.580
	1500.00	129.639	512.789	413.182	–1087.380	149.410	–1856.563	–1328.326	–898.656	31.294
	1600.00	129.799	521.161	419.672	–1074.408	162.382	–1908.264	–1326.696	–870.065	28.405
	1700.00	129.931	529.034	425.875	–1061.421	175.369	–1960.778	–1325.082	–841.575	25.858
	1800.00	130.042	536.464	431.815	–1048.422	188.368	–2014.056	–1323.485	–813.179	23.598
	1900.00	130.136	543.497	437.509	–1035.413	201.377	–2068.058	–1321.904	–784.872	21.578
	2000.00	130.217	550.174	442.977	–1022.395	214.395	–2122.744	–1320.339	–756.648	19.762

References

Phase	H / S	C_p
GAS	Tk1/e	e

77.945

ARSENIC HYDRIDE

AsH3[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	38.072	222.782	222.782	66.442	0.000	0.020	66.442	69.109	−12.108
	300.00	38.240	223.018	222.783	66.513	0.071	−0.393	66.387	69.125	−12.036
	400.00	44.933	235.027	224.375	70.703	4.261	−23.308	63.712	70.457	−9.201
	500.00	49.256	245.543	227.580	75.424	8.982	−47.348	61.482	72.408	−7.564
	600.00	52.646	254.832	231.363	80.524	14.082	−72.376	59.566	74.778	−6.510
	700.00	55.595	263.173	235.321	85.938	19.496	−98.283	57.896	77.449	−5.779
	800.00	58.309	270.776	239.284	91.635	25.193	−124.986	56.432	80.344	−5.246
	900.00	60.886	277.793	243.178	97.596	31.154	−152.418	55.148	83.412	−4.841
	1000.00	63.379	284.338	246.971	103.809	37.367	−180.529	54.046	86.613	−4.524
	1100.00	65.817	290.493	250.650	110.270	43.828	−209.273	53.111	89.917	−4.270
	1200.00	68.216	296.323	254.215	116.972	50.530	−238.616	52.245	93.301	−4.061
	1300.00	70.590	301.877	257.670	123.912	57.470	−268.528	51.267	96.760	−3.888
	1400.00	72.943	307.195	261.019	131.089	64.647	−298.984	49.919	100.307	−3.742
	1500.00	75.283	312.307	264.268	138.500	72.058	−329.961	−48.599	110.399	−3.844
	1600.00	77.612	317.240	267.426	146.145	79.703	−361.439	−47.698	120.970	−3.949
	1700.00	79.932	322.015	270.497	154.022	87.580	−393.403	−46.630	131.480	−4.040
	1800.00	82.246	326.649	273.489	162.131	95.689	−425.838	−45.391	141.922	−4.118
	1900.00	84.554	331.158	276.406	170.471	104.029	−458.729	−43.981	152.291	−4.187
	2000.00	86.859	335.554	279.254	179.042	112.600	−492.066	−42.397	162.580	−4.246

References

Phase	H / S	C_p
GAS	Nb1	Nb1,e

455.635

ARSENIC IODIDE

AsI3

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	105.773	213.049	213.049	−58.158	0.000	−121.679	−58.158	−59.091	10.353
	300.00	105.891	213.704	213.051	−57.962	0.196	−122.073	−58.159	−59.097	10.290
	400.00	112.257	245.039	217.281	−47.055	11.103	−145.070	−82.216	−58.568	7.648
	413.60	113.122	248.806	218.256	−45.522	12.636	−148.429	−82.675	−57.756	7.294
			53.818		22.259					
LIQ	413.60	137.654	302.624	218.256	−23.263	34.895	−148.429	−60.416	−57.756	7.294
	500.00	137.654	328.738	235.162	−11.370	46.788	−175.739	−121.389	−51.427	5.373
	600.00	137.654	353.835	252.913	2.395	60.553	−209.906	−115.872	−37.954	3.304
	700.00	137.654	375.055	268.885	16.161	74.319	−246.378	−110.429	−25.399	1.895

References

Phase	H / S	C_p
SOL	Nb1	Pa2
LIQ	Pa2	Pa2

AsI3[g] ARSENIC IODIDE (GAS) 455.635

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
GAS	298.15	80.960	391.816	391.816	38.911	0.000	−77.909	38.911	−15.321	2.684
	300.00	80.986	392.316	391.817	39.061	0.150	−78.634	38.864	−15.658	2.726
	400.00	81.899	415.758	395.007	47.211	8.300	−119.092	12.050	−32.589	4.256
	500.00	82.331	434.085	401.056	55.425	16.514	−161.617	−54.593	−37.305	3.897
	600.00	82.573	449.119	407.851	63.672	24.761	−205.800	−54.596	−33.848	2.947
	700.00	82.726	461.860	414.680	71.937	33.026	−251.365	−54.653	−30.386	2.267
	800.00	82.831	472.914	421.284	80.215	41.304	−298.116	−54.765	−26.913	1.757
	900.00	82.908	482.674	427.573	88.502	49.591	−345.905	−54.930	−23.422	1.359
	1000.00	82.968	491.413	433.528	96.796	57.885	−394.617	−55.128	−19.911	1.040
	1100.00	83.017	499.323	439.155	105.096	66.185	−444.160	−55.358	−16.378	0.778
	1200.00	83.058	506.548	444.475	113.399	74.488	−494.459	−55.706	−12.821	0.558
	1300.00	83.094	513.198	449.509	121.707	82.796	−545.450	−56.348	−9.224	0.371
	1400.00	83.126	519.357	454.281	130.018	91.107	−597.082	−57.536	−5.559	0.207
	1500.00	83.154	525.093	458.812	138.332	99.421	−649.308	−156.069	4.646	−0.162

References

Phase	H / S	C_p
GAS	Pa2	Pa2

AsO[g] ARSENIC MONOXIDE (GAS) 90.921

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
GAS	298.15	32.342	230.271	230.271	−57.287	0.000	−125.943	−57.287	−84.715	14.842
	300.00	32.414	230.471	230.272	−57.227	0.060	−126.369	−57.300	−84.885	14.780
	400.00	34.956	240.197	231.580	−53.841	3.447	−149.919	−57.906	−93.984	12.273
	500.00	36.133	248.138	234.123	−50.280	7.008	−174.349	−58.441	−102.942	10.754
	600.00	36.772	254.788	237.028	−46.632	10.656	−199.504	−58.995	−111.791	9.732
	700.00	37.158	260.487	239.982	−42.934	14.354	−225.275	−59.602	−120.543	8.995
	800.00	37.408	265.467	242.863	−39.205	18.083	−251.578	−60.273	−129.203	8.436
	900.00	37.579	269.883	245.625	−35.455	21.833	−278.349	−61.009	−137.776	7.996
	1000.00	37.702	273.849	248.252	−31.690	25.597	−305.539	−61.785	−146.264	7.640
	1100.00	37.793	277.447	250.745	−27.915	29.372	−333.107	−62.602	−154.673	7.345
	1200.00	37.862	280.738	253.109	−24.132	33.155	−361.019	−63.544	−163.003	7.095
	1300.00	37.916	283.771	255.353	−20.343	36.944	−389.246	−64.784	−171.244	6.881
	1400.00	37.958	286.583	257.484	−16.550	40.738	−417.765	−66.575	−179.371	6.692
	1500.00	37.993	289.203	259.513	−12.752	44.535	−446.556	−165.715	−180.914	6.300
	1600.00	38.021	291.656	261.446	−8.951	48.336	−475.600	−165.615	−181.931	5.939
	1700.00	38.044	293.961	263.291	−5.148	52.139	−504.882	−165.527	−182.954	5.621
	1800.00	38.064	296.136	265.056	−1.343	55.945	−534.388	−165.449	−183.981	5.339
	1900.00	38.080	298.195	266.747	2.465	59.752	−564.106	−165.383	−185.012	5.086
	2000.00	38.094	300.149	268.368	6.273	63.561	−594.024	−165.327	−186.047	4.859

References

Phase	H / S	C_p
GAS	Tk1	Tk1,e

197.841

ARSENIC OXIDE (CLAUDETITE) **As2O3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol		]	[−]
SOL	298.15	96.979	117.001	117.001	−654.796	0.000	−689.680	−654.796	−576.641	101.025
	300.00	97.261	117.602	117.003	−654.616	0.180	−689.897	−654.789	−576.157	100.318
	400.00	109.231	147.348	120.978	−644.248	10.548	−703.187	−653.890	−550.055	71.830
	500.00	117.913	172.690	128.848	−632.875	21.921	−719.220	−652.239	−524.275	54.771
	585.00	124.242	191.695	136.623	−622.579	32.217	−734.721	−650.413	−502.663	44.883
			38.622		22.594					
LIQ	585.00	152.716	230.317	136.623	−599.985	54.811	−734.721	−627.819	−502.663	44.883
	600.00	152.716	234.184	139.014	−597.694	57.102	−738.204	−627.042	−499.464	43.482
	700.00	152.716	257.725	154.334	−582.423	72.373	−762.830	−622.008	−478.602	35.714
	732.00	152.716	264.552	159.005	−577.536	77.260	−771.187	−620.448	−472.082	33.687

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	Pa1	B1	monoclinic, TPT= 240. (AR.−CL.)
LIQ	Tk1	e	Tk1	BPT= 732., L= 28.033 kJ, GAS (As4O6)

197.841

ARSENIC OXIDE (ARSENOLITE) **As2O3**[A]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol		]	[−]
SOL	298.15	96.878	107.412	107.412	−656.972	0.000	−688.997	−656.972	−575.958	100.905
	300.00	97.170	108.012	107.413	−656.793	0.179	−689.196	−656.965	−575.456	100.196
	400.00	109.986	137.835	111.393	−646.395	10.577	−701.529	−656.037	−548.397	71.613
	500.00	119.821	163.466	119.303	−634.890	22.082	−716.624	−654.255	−521.678	54.499
	551.00	124.333	175.322	123.945	−628.664	28.308	−725.266	−653.087	−508.212	48.178

References

Phase	H / S	C_p	Remarks	
SOL	Nb1/Pa1	Pa1	Tk1	MPT= 551., L= 24.3 kJ

As_2O_5 DIARSENIC PENTAOXIDE 229.840

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	116.536	105.399	105.399	−924.869	0.000	−956.294	−924.869	−782.091	137.019
	300.00	116.978	106.121	105.401	−924.653	0.216	−956.489	−924.880	−781.205	136.020
	400.00	136.540	142.619	110.245	−911.920	12.949	−968.967	−924.587	−733.312	95.761
	500.00	151.778	174.770	119.998	−897.483	27.386	−984.868	−922.932	−685.661	71.630
	600.00	165.314	203.656	131.573	−881.619	43.250	−1003.813	−920.211	−638.446	55.582

References

Phase	H / S	C_p
SOL	Nb1	Pa1

As_4O_6[g] TETRAARSENIC HEXAOXIDE (GAS) 395.683

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	173.596	409.346	409.346	−1196.247	0.000	−1318.294	−1196.247	−1092.217	191.352
	300.00	174.180	410.422	409.350	−1195.925	0.322	−1319.052	−1196.271	−1091.571	190.059
	400.00	195.373	463.832	416.488	−1177.310	18.937	−1362.842	−1196.594	−1056.578	137.975
	500.00	206.180	508.700	430.570	−1157.182	39.065	−1411.532	−1195.911	−1021.642	106.730
	600.00	212.899	546.925	446.857	−1136.206	60.041	−1464.361	−1194.903	−986.880	85.916
	700.00	217.687	580.121	463.576	−1114.666	81.581	−1520.750	−1193.838	−952.294	71.061
	800.00	221.446	609.442	480.012	−1092.703	103.544	−1580.257	−1192.813	−917.858	59.930
	900.00	224.608	635.712	495.878	−1070.396	125.851	−1642.537	−1191.853	−883.547	51.280
	1000.00	227.397	659.524	511.070	−1047.793	148.454	−1707.317	−1190.876	−849.343	44.365

References

Phase	H / S	C_p
GAS	Pa1	Pa1

106.988

ARSENIC MONOSULFIDE (GAS) **AsS**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	34.827	242.045	242.045	189.117	0.000	116.951	189.117	137.155	−24.029
	300.00	34.874	242.261	242.046	189.181	0.064	116.503	189.094	136.832	−23.825
	400.00	37.409	252.652	243.445	192.800	3.683	91.739	185.624	119.690	−15.630
	500.00	39.085	261.197	246.166	196.632	7.515	66.034	182.988	103.491	−10.812
	600.00	39.978	268.411	249.289	200.591	11.474	39.544	180.748	87.811	−7.645
	700.00	40.380	274.609	252.474	204.612	15.495	12.385	178.781	72.478	−5.408
	800.00	40.493	280.011	255.586	208.657	19.540	−15.352	176.735	57.429	−3.750
	900.00	40.439	284.778	258.570	212.705	23.588	−43.596	121.794	43.797	−2.542
	1000.00	40.300	289.032	261.407	216.742	27.625	−72.290	121.186	35.163	−1.837
	1100.00	40.129	292.865	264.096	220.764	31.647	−101.388	120.528	26.592	−1.263
	1200.00	39.965	296.350	266.640	224.768	35.651	−130.851	119.733	18.086	−0.787

References

Phase	H / S	C_p
GAS	Pa3	Pa3

213.975

DIARSENIC DISULFIDE **As2S2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	94.067	126.775	126.775	−142.256	0.000	−180.054	−142.256	−139.647	24.466
	300.00	94.136	127.357	126.777	−142.082	0.174	−180.289	−142.257	−139.631	24.312
	400.00	97.872	154.950	130.514	−132.482	9.774	−194.462	−146.832	−138.559	18.094
	500.00	101.608	177.191	137.694	−122.507	19.749	−211.103	−149.796	−136.189	14.228
	580.00	104.597	192.488	144.218	−114.259	27.997	−225.902	−151.527	−133.868	12.056
			10.460		6.067					
LIQ	580.00	146.440	202.948	144.218	−108.192	34.064	−225.902	−145.460	−133.868	12.056
	600.00	146.440	207.913	146.259	−105.263	36.993	−230.011	−144.949	−133.477	11.620
	700.00	146.440	230.487	156.720	−90.619	51.637	−251.960	−142.280	−131.776	9.833

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	Mi1		
LIQ	Mi1	Mi1	Mi1	DEC. GAS(As4S4 + As4 + As2 + S2)

As2S3 ARSENIC SULFIDE 246.041

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−1	298.15	116.511	163.594	163.594	−167.360	0.000	−216.136	−167.360	−166.172	29.113
	300.00	116.579	164.315	163.597	−167.144	0.216	−216.439	−167.362	−166.164	28.932
	400.00	120.223	198.352	168.213	−155.304	12.056	−234.645	−174.279	−165.465	21.608
	450.00	122.045	212.617	172.368	−149.248	18.112	−244.925	−176.291	−164.274	19.068
			0.604		0.272					
SOL−2	450.00	122.045	213.222	172.368	−148.976	18.384	−244.925	−176.019	−164.274	19.068
	500.00	123.867	226.175	177.111	−142.828	24.532	−255.915	−178.642	−162.820	17.010
	585.00	126.965	245.859	185.701	−132.167	35.193	−275.995	−181.634	−159.870	14.275
			48.991		28.660					
LIQ	585.00	187.726	294.851	185.701	−103.507	63.853	−275.995	−152.974	−159.870	14.275
	600.00	187.979	299.607	188.490	−100.690	66.670	−280.454	−152.476	−160.053	13.934
	700.00	189.665	328.711	206.493	−81.807	85.553	−311.905	−148.879	−161.596	12.058
	800.00	191.351	354.147	223.393	−62.757	104.603	−346.074	−145.372	−163.657	10.686
	900.00	193.037	376.782	239.201	−43.537	123.823	−382.641	−300.337	−162.687	9.442
	995.00	194.639	396.232	253.280	−25.123	142.237	−419.373	−292.490	−148.557	7.799

References

Phase	H / S	C_p	Remarks
SOL−1	Mi1	Mi1	
SOL−2	Mi1	Mi1	
LIQ	Mi1	Mi1	Mi1/Tk1 DEC. GAS (As2S2 + S2 + As4) / BPT= 995., L= 86.2 kJ

As4S4 TETRAARSENIC TETRASULFIDE 427.950

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	188.147	254.053	254.053	−134.725	0.000	−210.471	−134.725	−129.657	22.715
	300.00	188.342	255.217	254.056	−134.377	0.348	−210.942	−134.728	−129.626	22.570
	400.00	197.438	310.699	261.559	−115.069	19.656	−239.349	−143.771	−127.544	16.656
	500.00	205.133	355.597	276.015	−94.934	39.791	−272.733	−149.512	−122.904	12.840
	580.15	210.886	386.517	289.189	−78.260	56.465	−302.498	−152.832	−118.362	10.657
			45.976		26.673					
LIQ	580.15	266.534	432.493	289.189	−51.587	83.138	−302.498	−126.159	−118.362	10.657
	600.00	268.638	441.493	294.079	−46.277	88.448	−311.173	−125.647	−118.104	10.282
	700.00	285.817	484.073	318.226	−18.632	116.093	−357.483	−121.953	−117.114	8.739
	800.00	310.093	523.766	341.459	11.120	145.845	−407.893	−116.568	−116.771	7.624

References

Phase	H / S	C_p
SOL	Pa3	Pa3
LIQ	Pa3	Pa3

427.950 TETRAARSENIC TETRASULFIDE (GAS) **As4S4**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
GAS	298.15	164.180	446.082	446.082	−2.092	0.000	−135.091	−2.092	−54.278	9.509
	300.00	164.388	447.098	446.085	−1.788	0.304	−135.918	−2.139	−54.602	9.507
	400.00	172.015	495.576	452.643	15.081	17.173	−183.149	−13.620	−71.345	9.317
	500.00	175.781	534.409	465.243	32.491	34.583	−234.714	−22.087	−84.885	8.868
	600.00	177.903	566.662	479.535	50.184	52.276	−289.813	−29.187	−96.744	8.422
	700.00	179.210	594.191	493.996	68.045	70.137	−347.889	−35.276	−107.520	8.023
	800.00	180.069	618.181	508.052	86.011	88.103	−408.534	−41.677	−117.412	7.666
	900.00	180.663	639.426	521.491	104.050	106.142	−471.434	−259.595	−121.862	7.073
	1000.00	181.087	658.484	534.254	122.138	124.230	−536.346	−260.086	−106.533	5.565
	1100.00	181.401	675.759	546.345	140.263	142.355	−603.072	−260.679	−91.151	4.328
	1200.00	181.637	691.554	557.797	158.416	160.508	−671.449	−261.723	−75.698	3.295

References

Phase	H / S	C_p
GAS	Pa3	Pa3

427.950 TETRAARSENIC TETRASULFIDE (REALGAR) **As4S4**[R]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL	298.15	188.154	254.053	254.053	−138.072	0.000	−213.818	−138.072	−133.004	23.302
	300.00	188.334	255.217	254.056	−137.724	0.348	−214.289	−138.075	−132.973	23.153
	400.00	197.382	310.670	261.556	−118.426	19.646	−242.694	−147.128	−130.890	17.092
	500.00	205.188	355.572	276.006	−98.289	39.783	−276.075	−152.867	−126.246	13.189
	580.15	210.856	386.495	289.178	−81.614	56.458	−305.839	−156.186	−121.703	10.958

References

Phase	H / S	C_p
SOL	Pa3	Pa3

AsSe[g] ARSENIC MONOSELENIDE (GAS) 153.882

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	35.735	247.760	247.760	207.108	0.000	133.238	207.108	156.483	−27.415
	300.00	35.738	247.981	247.761	207.174	0.066	132.780	207.082	156.169	−27.192
	400.00	35.894	258.284	249.165	210.756	3.648	107.442	205.489	139.430	−18.208
	500.00	36.049	266.310	251.820	214.353	7.245	81.198	197.709	123.212	−12.872
	600.00	36.205	272.896	254.801	217.966	10.858	54.228	195.185	108.548	−9.450
	700.00	36.361	278.489	257.795	221.594	14.486	26.651	192.621	94.311	−7.038
	800.00	36.516	283.355	260.693	225.238	18.130	−1.446	190.018	80.444	−5.252
	900.00	36.672	287.665	263.454	228.897	21.789	−30.001	187.380	66.906	−3.883
	1000.00	36.828	291.536	266.072	232.572	25.464	−58.964	184.731	53.662	−2.803
	1100.00	36.983	295.054	268.550	236.263	29.155	−88.297	128.758	45.637	−2.167
	1200.00	37.139	298.278	270.894	239.969	32.861	−117.965	127.446	38.138	−1.660
	1300.00	37.295	301.257	273.117	243.690	36.582	−147.944	125.874	30.756	−1.236
	1400.00	37.450	304.027	275.227	247.428	40.320	−178.210	123.789	23.514	−0.877
	1500.00	37.606	306.616	277.234	251.180	44.072	−208.743	24.394	22.873	−0.797
	1600.00	37.761	309.048	279.147	254.949	47.841	−239.528	24.276	22.776	−0.744
	1700.00	37.917	311.342	280.974	258.733	51.625	−270.548	24.185	22.685	−0.697
	1800.00	38.073	313.513	282.722	262.532	55.424	−301.792	24.121	22.599	−0.656

References

Phase	H / S	C_p
GAS	Mi1	Mi1

As2Se3 ARSENIC SELENIDE 386.723

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	121.387	194.556	194.556	−102.508	0.000	−160.515	−102.508	−101.425	17.769
	300.00	121.545	195.307	194.558	−102.283	0.225	−160.875	−102.515	−101.418	17.659
	400.00	130.122	231.448	199.428	−89.700	12.808	−182.279	−102.948	−100.989	13.188
	500.00	138.700	261.406	208.907	−76.259	26.249	−206.962	−121.072	−100.197	10.467
	600.00	147.277	287.452	219.872	−61.960	40.548	−234.431	−122.561	−95.869	8.346
	650.00	151.565	299.410	225.534	−54.489	48.019	−249.105	−123.026	−93.625	7.524
			62.760		40.794					
LIQ	650.00	195.393	362.170	225.534	−13.695	88.813	−249.105	−82.232	−93.625	7.524
	700.00	195.393	376.650	235.817	−3.925	98.583	−267.580	−80.426	−94.569	7.057
	800.00	195.393	402.741	255.088	15.614	118.122	−306.579	−76.894	−96.832	6.322

References

Phase	H / S	C_p
SOL	Mi1	Mi1
LIQ	Mi1	Mi1

202.522

ARSENIC MONOTELLURIDE (GAS) **AsTe[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	36.605	255.710	255.710	228.865	0.000	152.625	228.865	178.028	−31.190
	300.00	36.606	255.936	255.711	228.933	0.068	152.152	228.839	177.713	−30.943
	400.00	36.677	266.477	257.147	232.597	3.732	126.006	227.312	160.893	−21.011
	500.00	36.748	274.669	259.863	236.268	7.403	98.934	225.510	144.491	−15.095
	600.00	36.819	281.375	262.906	239.946	11.081	71.121	223.439	128.478	−11.185
	700.00	36.890	287.056	265.961	243.632	14.767	42.693	221.099	112.832	−8.420
	800.00	36.961	291.987	268.912	247.325	18.460	13.735	200.869	99.420	−6.491
	900.00	37.033	296.344	271.723	251.024	22.159	−15.686	198.020	86.910	−5.044
	1000.00	37.104	300.250	274.384	254.731	25.866	−45.519	195.151	74.718	−3.903
	1100.00	37.175	303.790	276.899	258.445	29.580	−75.723	192.263	62.814	−2.983
	1200.00	37.246	307.027	279.276	262.166	33.301	−106.267	189.267	51.177	−2.228
	1300.00	37.317	310.011	281.527	265.894	37.029	−137.120	185.992	39.800	−1.599
	1400.00	37.388	312.779	283.662	269.629	40.764	−168.262	135.745	31.184	−1.163
	1500.00	37.459	315.361	285.690	273.372	44.507	−199.670	36.179	30.244	−1.053
	1600.00	37.530	317.781	287.621	277.121	48.256	−231.329	35.877	29.858	−0.975
	1700.00	37.602	320.059	289.463	280.878	52.013	−263.222	35.586	29.491	−0.906
	1800.00	37.673	322.210	291.223	284.642	55.777	−295.336	35.305	29.140	−0.846

References

Phase	H / S	C_p
GAS	Mi1	Mi1

532.643

ARSENIC TELLURIDE **As2Te3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	127.491	226.354	226.354	−37.656	0.000	−105.144	−37.656	−39.580	6.934
	300.00	127.830	227.144	226.357	−37.420	0.236	−105.563	−37.654	−39.592	6.893
	400.00	141.304	265.950	231.556	−23.899	13.757	−130.279	−37.201	−40.291	5.261
	500.00	149.923	298.459	241.775	−9.314	28.342	−158.543	−36.469	−41.146	4.299
	600.00	156.630	326.405	253.605	6.024	43.680	−189.819	−35.757	−42.150	3.670
	648.00	159.496	338.569	259.452	13.612	51.268	−205.781	−35.465	−42.673	3.440
			72.316		46.861					
LIQ	648.00	167.360	410.886	259.452	60.473	98.129	−205.781	−11.396	−42.673	3.440
	700.00	167.360	423.804	271.188	69.175	106.831	−227.487	11.995	−47.037	3.510
	800.00	167.360	446.152	291.693	85.911	123.567	−271.010	−40.306	−49.878	3.257

References

Phase	H / S	C_p	Remarks	
SOL	B3/Z1	B3,Mi1	Pa3	TPT= 358.
LIQ	B3	B3,Mi1		

Au GOLD 196.967

Phase	T [K]	C_p J/(K mol)	S J/(K mol)	−(G−H298)/T J/(K mol)	H kJ/mol	H−H298 kJ/mol	G kJ/mol	ΔH_f kJ/mol	ΔG_f kJ/mol	log K_f [−]
SOL	298.15	25.317	47.497	47.497	0.000	0.000	−14.161	0.000	0.000	0.000
	300.00	25.325	47.653	47.497	0.047	0.047	−14.249	0.000	0.000	0.000
	400.00	25.761	54.999	48.496	2.601	2.601	−19.398	0.000	0.000	0.000
	500.00	26.196	60.794	50.396	5.199	5.199	−25.198	0.000	0.000	0.000
	600.00	26.631	65.608	52.541	7.840	7.840	−31.525	0.000	0.000	0.000
	700.00	27.066	69.746	54.710	10.525	10.525	−38.297	0.000	0.000	0.000
	800.00	27.502	73.389	56.822	13.254	13.254	−45.457	0.000	0.000	0.000
	900.00	27.962	76.654	58.847	16.026	16.026	−52.962	0.000	0.000	0.000
	1000.00	28.560	79.629	60.779	18.851	18.851	−60.779	0.000	0.000	0.000
	1100.00	29.401	82.388	62.619	21.746	21.746	−68.881	0.000	0.000	0.000
	1200.00	30.569	84.994	64.376	24.742	24.742	−77.251	0.000	0.000	0.000
	1300.00	32.175	87.496	66.059	27.868	27.868	−85.876	0.000	0.000	0.000
	1337.58	33.442	88.429	66.674	29.099	29.099	−89.182	0.000	0.000	0.000
			9.384		12.552					
LIQ	1337.58	30.962	97.813	66.674	41.651	41.651	−89.182	0.000	0.000	0.000
	1400.00	30.962	99.225	68.094	43.584	43.584	−95.332	0.000	0.000	0.000
	1500.00	30.962	101.361	70.242	46.680	46.680	−105.362	0.000	0.000	0.000
	1600.00	30.962	103.360	72.250	49.776	49.776	−115.599	0.000	0.000	0.000
	1700.00	30.962	105.237	74.135	52.872	52.872	−126.030	0.000	0.000	0.000
	1800.00	30.962	107.006	75.913	55.968	55.968	−136.643	0.000	0.000	0.000
	1900.00	30.962	108.680	77.594	59.064	59.064	−147.428	0.000	0.000	0.000
	2000.00	30.962	110.268	79.188	62.160	62.160	−158.376	0.000	0.000	0.000
	2100.00	30.962	111.779	80.704	65.257	65.257	−169.479	0.000	0.000	0.000
	2200.00	30.962	113.219	82.150	68.353	68.353	−180.730	0.000	0.000	0.000
	2300.00	30.962	114.596	83.531	71.449	71.449	−192.121	0.000	0.000	0.000
	2400.00	30.962	115.913	84.853	74.545	74.545	−203.647	0.000	0.000	0.000
	2500.00	30.962	117.177	86.121	77.641	77.641	−215.302	0.000	0.000	0.000
	2600.00	30.962	118.392	87.339	80.737	80.737	−227.081	0.000	0.000	0.000
	2700.00	30.962	119.560	88.511	83.834	83.834	−238.979	0.000	0.000	0.000
	2800.00	30.962	120.686	89.640	86.930	86.930	−250.992	0.000	0.000	0.000
	2900.00	30.962	121.773	90.729	90.026	90.026	−263.115	0.000	0.000	0.000
	3000.00	30.962	122.822	91.782	93.122	93.122	−275.345	0.000	0.000	0.000
	3100.00	30.962	123.838	92.799	96.218	96.218	−287.678	0.000	0.000	0.000
	3127.00	30.962	124.106	93.069	97.054	97.054	−291.025	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks	
SOL	Hu1	Hu1	Hu1	MPT= 1337.58 (IPTS REF. POINT)
LIQ	Hu1	Hu1	Hu1	BPT= 3127., L= 334.38 kJ

196.967

GOLD (GAS)

Au[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	20.786	180.503	180.503	368.192	0.000	314.375	368.192	328.536	−57.558
	300.00	20.786	180.631	180.503	368.230	0.038	314.041	368.184	328.290	−57.160
	400.00	20.786	186.611	181.318	370.309	2.117	295.665	367.708	315.063	−41.143
	500.00	20.786	191.249	182.858	372.388	4.196	276.763	367.189	301.961	−31.546
	600.00	20.786	195.039	184.582	374.466	6.274	257.443	366.626	288.968	−25.157
	700.00	20.786	198.243	186.310	376.545	8.353	237.775	366.020	276.072	−20.601
	800.00	20.786	201.019	187.979	378.624	10.432	217.808	365.370	263.266	−17.190
	900.00	20.790	203.467	189.567	380.702	12.510	197.582	364.676	250.544	−14.541
	1000.00	20.799	205.658	191.068	382.782	14.590	177.124	363.931	237.902	−12.427
	1100.00	20.811	207.641	192.486	384.862	16.670	156.457	363.116	225.338	−10.700
	1200.00	20.835	209.453	193.826	386.944	18.752	135.601	362.202	212.852	−9.265
	1300.00	20.882	211.122	195.093	389.030	20.838	114.571	361.162	200.448	−8.054
	1400.00	20.962	212.672	196.294	391.122	22.930	93.381	347.538	188.712	−7.041
	1500.00	21.078	214.122	197.435	393.223	25.031	72.040	346.544	177.403	−6.178
	1600.00	21.235	215.487	198.521	395.339	27.147	50.559	345.563	166.159	−5.425
	1700.00	21.434	216.780	199.557	397.472	29.280	28.945	344.600	154.975	−4.762
	1800.00	21.673	218.012	200.548	399.627	31.435	7.205	343.659	143.848	−4.174
	1900.00	21.952	219.191	201.499	401.808	33.616	−14.656	342.744	132.773	−3.650
	2000.00	22.267	220.325	202.412	404.019	35.827	−36.632	341.858	121.745	−3.180
	2100.00	22.615	221.420	203.291	406.262	38.070	−58.719	341.006	110.760	−2.755
	2200.00	22.991	222.480	204.139	408.542	40.350	−80.915	340.190	99.815	−2.370
	2300.00	23.390	223.511	204.959	410.861	42.669	−103.214	339.412	88.907	−2.019
	2400.00	23.808	224.515	205.753	413.221	45.029	−125.616	338.676	78.031	−1.698
	2500.00	24.239	225.496	206.523	415.623	47.431	−148.117	337.982	67.185	−1.404
	2600.00	24.677	226.455	207.272	418.069	49.877	−170.714	337.332	56.367	−1.132
	2700.00	25.117	227.395	208.000	420.559	52.367	−193.407	336.725	45.572	−0.882
	2800.00	25.552	228.316	208.709	423.092	54.900	−216.193	336.163	34.799	−0.649
	2900.00	25.976	229.220	209.401	425.669	57.477	−239.070	335.643	24.045	−0.433
	3000.00	26.383	230.108	210.076	428.287	60.095	−262.036	335.165	13.309	−0.232
	3100.00	26.767	230.979	210.736	430.945	62.753	−285.091	334.726	2.587	−0.044
	3200.00	27.120	231.835	211.382	433.639	65.447	−308.231	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1

Au3AsO4 — TRIGOLD ARSENATE — 729.819

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	177.596	298.361	298.361	−384.217	0.000	−473.173	−384.217	−297.715	52.158
	300.00	177.783	299.460	298.364	−383.888	0.329	−473.726	−384.183	−297.178	51.743
	400.00	187.059	351.909	305.453	−365.635	18.582	−506.398	−382.041	−268.483	35.060
	500.00	195.472	394.563	319.137	−346.504	37.713	−543.785	−379.388	−240.391	25.114
	569.00	201.065	420.187	329.863	−332.823	51.394	−571.909	−377.303	−221.345	20.320

References

Phase	H / S	C_p
SOL	G1	G1

AuBr — GOLD MONOBROMIDE — 276.871

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	50.052	98.253	98.253	−14.226	0.000	−43.520	−14.226	−6.668	1.168
	300.00	50.073	98.563	98.254	−14.133	0.093	−43.702	−14.250	−6.621	1.153
	400.00	51.024	113.106	100.230	−9.076	5.150	−54.318	−28.988	−1.012	0.132

References

Phase	H / S	C_p
SOL	Tk1	e

309.378

GOLD CADMIUM **AuCd**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	55.428	99.998	99.998	−38.828	0.000	−68.642	−38.828	−39.038	6.839
	300.00	55.459	100.341	99.999	−38.725	0.103	−68.828	−38.820	−39.039	6.797
	400.00	57.112	116.521	102.194	−33.097	5.731	−79.705	−38.402	−39.175	5.116
	500.00	58.764	129.443	106.393	−27.303	11.525	−92.025	−37.984	−39.416	4.118
	600.00	60.417	140.303	111.163	−21.344	17.484	−105.526	−43.758	−39.680	3.454
	700.00	62.070	149.741	116.014	−15.220	23.608	−120.038	−43.289	−39.035	2.913
	800.00	63.722	158.137	120.764	−8.930	29.898	−135.439	−42.699	−38.466	2.512
	899.00	65.358	165.665	125.301	−2.541	36.287	−151.473	−41.995	−37.983	2.207

References

Phase	H / S	C_p	Remarks
SOL	Nb1	e	Tk1 MPT= 899., L= 18.0 kJ

232.419

GOLD MONOCHLORIDE **AuCl**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	48.744	85.923	85.923	−36.401	0.000	−62.019	−36.401	−14.597	2.557
	300.00	48.771	86.224	85.924	−36.311	0.090	−62.178	−36.389	−14.461	2.518
	400.00	49.926	100.426	87.852	−31.372	5.029	−71.542	−35.738	−7.250	0.947
	500.00	50.752	111.658	91.529	−26.336	10.065	−82.165	−35.086	−0.204	0.021
	573.00	51.269	118.610	94.545	−22.612	13.789	−90.575	−34.610	4.856	−0.443

References

Phase	H / S	C_p	Remarks
SOL	Tk1	e	Tk1 MPT= 573.

AuCl3 GOLD TRICHLORIDE 303.325

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	94.821	148.114	148.114	−117.600	0.000	−161.760	−117.600	−47.816	8.377
	300.00	94.888	148.700	148.115	−117.425	0.175	−162.035	−117.566	−47.383	8.250
	400.00	97.466	176.393	151.874	−107.792	9.808	−178.349	−115.688	−24.271	3.169
	500.00	98.952	198.313	159.045	−97.966	19.634	−197.123	−113.816	−1.633	0.171

References

Phase	H / S	C_p
SOL	Nb1/Ku1	e

AuCu GOLD COPPER 260.513

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SA−12	298.15	48.737	100.583	100.583	−17.489	0.000	−47.478	−17.489	−23.429	4.105
	300.00	48.775	100.885	100.584	−17.399	0.090	−47.664	−17.491	−23.466	4.086
	400.00	50.812	115.196	102.522	−12.419	5.070	−58.498	−17.559	−25.445	3.323
	500.00	52.850	126.753	106.248	−7.236	10.253	−70.613	−17.536	−27.417	2.864
	600.00	54.888	136.569	110.503	−1.849	15.640	−83.791	−17.410	−29.404	2.560
	658.00	107.139	144.012	113.098	2.852	20.341	−91.908	−15.804	−30.614	2.430
			0.000		0.000					
SA−22	658.00	123.512	144.012	113.098	2.852	20.341	−91.908	−15.804	−30.614	2.430
	683.00	123.512	148.618	114.315	5.940	23.429	−95.566	−14.061	−31.210	2.387
			4.104		2.803					
SOL−A	683.00	79.348	152.722	114.315	8.743	26.232	−95.566	−11.258	−31.210	2.387
	700.00	72.462	154.586	115.271	10.032	27.521	−98.178	−10.888	−31.711	2.366
	800.00	54.052	162.700	120.729	16.088	33.577	−114.072	−10.285	−34.750	2.269
	900.00	59.660	169.221	125.755	21.630	39.119	−130.669	−10.291	−37.803	2.194

References

Phase	H / S	C_p	Remarks
SA−12	Hu1	Hu1	SA−12 = SOL−A(I)2
SA−22	Hu1	Hu1	SA−22 = SOL−A(II)2
SOL−A	Hu1	Hu1	

387.605

GOLD 3–COPPER **AuCu3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SA−11	298.15	96.754	149.620	149.620	−28.619	0.000	−73.228	−28.619	−29.403	5.151
	300.00	96.835	150.219	149.622	−28.440	0.179	−73.505	−28.622	−29.408	5.120
	400.00	101.929	178.739	153.476	−18.514	10.105	−90.009	−28.730	−29.648	3.872
	500.00	108.479	202.161	160.934	−8.006	20.613	−109.086	−28.506	−29.895	3.123
	600.00	116.485	222.624	169.542	3.231	31.850	−130.344	−27.769	−30.232	2.632
	663.00	217.879	238.582	175.268	13.358	41.977	−144.821	−24.365	−30.602	2.411
			7.219		4.786					
SOL−A	663.00	124.825	245.801	175.268	18.144	46.763	−144.821	−19.579	−30.602	2.411
	700.00	122.105	252.506	179.175	22.713	51.332	−154.042	−18.996	−31.234	2.331
	800.00	114.751	268.331	189.363	34.555	63.174	−180.109	−18.057	−33.058	2.158

References

Phase	H / S	C_p	Remarks
SA−11	Hu1	Hu1	SA−11 = SOL−A(l)1
SOL−A	Hu1	Hu1	

253.962

GOLD TRIFLUORIDE **AuF3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL	298.15	91.280	114.223	114.223	−363.598	0.000	−397.654	−363.598	−292.797	51.297
	300.00	91.365	114.788	114.225	−363.429	0.169	−397.865	−363.563	−292.358	50.904
	400.00	94.600	141.565	117.854	−354.113	9.485	−410.740	−361.622	−268.915	35.117
	500.00	96.525	162.896	124.801	−344.551	19.047	−425.999	−359.702	−245.962	25.695
	600.00	97.933	180.624	132.669	−334.825	28.773	−443.199	−357.827	−223.390	19.448

References

Phase	H / S	C_p
SOL	Nb1/Ku1	e

AuI — GOLD MONOIODIDE — 323.871

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	51.830	119.244	119.244	0.000	0.000	−35.553	0.000	−4.078	0.714
	300.00	51.840	119.565	119.245	0.096	0.096	−35.773	−0.001	−4.103	0.714
	400.00	52.384	134.552	121.285	5.307	5.307	−48.514	−8.164	−5.173	0.675

References

Phase	H / S	C_p
SOL	Nb1/Ku1	e

Au2O3 — DIGOLD TRIOXIDE — 441.931

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	114.016	130.332	130.332	−3.347	0.000	−42.205	−3.347	77.864	−13.641
	300.00	114.056	131.037	130.334	−3.136	0.211	−42.447	−3.311	78.368	−13.645
	400.00	116.232	164.147	134.833	8.378	11.725	−57.280	−1.362	105.301	−13.751
	500.00	118.407	190.317	143.402	20.110	23.457	−75.048	0.586	131.741	−13.763

References

Phase	H / S	C_p
SOL	Ku1	e

247.989

GOLD TRIHYDROXIDE (PRECIPITATED) **Au(OH)3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	94.000	189.502	189.502	−424.701	0.000	−481.201	−424.701	−316.850	55.511
	300.00	94.374	190.084	189.503	−424.527	0.174	−481.552	−424.735	−316.180	55.052
	400.00	114.633	220.009	193.447	−414.076	10.625	−502.080	−425.655	−279.806	36.539

References

Phase	H / S	C_p
SOL	Nb1	e

486.854

DIGOLD TRIPHOSPHIDE **Au2P3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	119.593	150.624	150.624	−102.508	0.000	−147.417	−102.508	−82.359	14.429
	300.00	119.662	151.364	150.626	−102.287	0.221	−147.696	−102.513	−82.234	14.318
	400.00	123.428	186.304	155.365	−90.132	12.376	−164.654	−105.221	−74.859	9.776
	500.00	127.194	214.251	164.437	−77.601	24.907	−184.727	−105.783	−67.197	7.020
	600.00	130.959	237.774	174.750	−64.693	37.815	−207.358	−106.056	−59.449	5.176
	700.00	134.725	258.244	185.246	−51.409	51.099	−232.180	−106.039	−51.679	3.856
	800.00	138.490	276.480	195.531	−37.748	64.760	−258.933	−105.734	−43.931	2.868
	900.00	142.256	293.009	205.457	−23.711	78.797	−287.420	−105.139	−36.238	2.103
	1000.00	146.022	308.192	214.982	−9.297	93.211	−317.490	−104.272	−28.626	1.495

References

Phase	H / S	C_p
SOL	Tk1/Ku1	e

AuS[g] GOLD MONOSULFIDE (GAS) 229.033

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	35.515	267.676	267.676	230.538	0.000	150.730	230.538	174.449	−30.563
	300.00	35.537	267.896	267.677	230.604	0.066	150.235	230.515	174.101	−30.314
	400.00	36.329	278.244	269.082	234.203	3.665	122.905	226.978	155.581	−20.317
	500.00	36.699	286.395	271.759	237.856	7.318	94.659	224.132	138.038	−14.421
	600.00	36.902	293.105	274.774	241.537	10.999	65.674	221.595	121.065	−10.540
	700.00	37.026	298.804	277.810	245.234	14.696	36.071	219.298	104.492	−7.797
	800.00	37.108	303.754	280.750	248.941	18.403	5.938	216.916	88.252	−5.762
	900.00	37.167	308.128	283.554	252.655	22.117	−24.661	161.651	73.470	−4.264
	1000.00	37.210	312.046	286.211	256.374	25.836	−55.673	160.710	63.722	−3.328
	1100.00	37.243	315.594	288.723	260.096	29.558	−87.057	159.695	54.071	−2.568
	1200.00	37.269	318.836	291.099	263.822	33.284	−118.781	158.577	44.518	−1.938
	1300.00	37.291	321.820	293.349	267.550	37.012	−150.816	157.325	35.063	−1.409
	1400.00	37.309	324.584	295.483	271.280	40.742	−183.138	143.480	26.293	−0.981
	1500.00	37.325	327.159	297.510	275.012	44.474	−215.727	142.252	17.966	−0.626
	1600.00	37.338	329.568	299.439	278.745	48.207	−248.564	141.021	9.720	−0.317
	1700.00	37.351	331.832	301.279	282.479	51.941	−281.635	139.786	1.552	−0.048
	1800.00	37.362	333.967	303.036	286.215	55.677	−314.926	138.549	−6.544	0.190
	1900.00	37.372	335.988	304.717	289.952	59.414	−348.425	137.309	−14.571	0.401
	2000.00	37.381	337.905	306.329	293.689	63.151	−382.121	136.066	−22.532	0.588

References

Phase	H / S	C_p
GAS	Mi1	Mi1

AuSb2 GOLD 2−ANTIMONY 440.467

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	77.418	119.244	119.244	−13.054	0.000	−48.607	−13.054	−7.301	1.279
	300.00	77.454	119.723	119.245	−12.911	0.143	−48.828	−13.051	−7.265	1.265
	400.00	79.396	142.271	122.307	−5.068	7.986	−61.977	−12.889	−5.360	0.700
	500.00	81.337	160.196	128.151	2.968	16.022	−77.130	−12.690	−3.500	0.366
	600.00	83.278	175.197	134.775	11.199	24.253	−93.919	−12.457	−1.684	0.147
	700.00	85.220	188.181	141.498	19.624	32.678	−112.102	−12.235	0.094	−0.007
	733.00	85.860	192.121	143.689	22.447	35.501	−118.378	−12.174	0.673	−0.048

References

Phase	H / S	C_p	Remarks
SOL	Hu1/Ku1	Ku1	Hu1 DPT= 733. (peritec.)

275.927

GOLD MONOSELENIDE (ALPHA) **AuSe**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	50.161	75.730	75.730	−13.807	0.000	−36.386	−13.807	−9.626	1.686
	300.00	50.212	76.041	75.731	−13.714	0.093	−36.526	−13.808	−9.600	1.671
	400.00	53.003	90.868	77.734	−8.553	5.254	−44.901	−13.869	−8.188	1.069
	500.00	55.794	102.995	81.608	−3.114	10.693	−54.611	−19.838	−6.676	0.697
	600.00	58.584	113.414	86.060	2.605	16.412	−65.443	−20.274	−3.998	0.348
	673.00	60.622	120.255	89.403	6.956	20.763	−73.976	−20.445	−2.007	0.156

References

Phase	H / S	C_p	Remarks
SOL−A	Mi1	Mi1	Mi1 MPT= 673.

275.927

GOLD MONOSELENIDE (BETA) **AuSe**[B]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−B	298.15	50.161	84.935	84.935	−10.878	0.000	−36.201	−10.878	−9.441	1.654
	300.00	50.212	85.246	84.936	−10.785	0.093	−36.359	−10.879	−9.432	1.642
	400.00	53.003	100.073	86.939	−5.624	5.254	−45.654	−10.940	−8.941	1.168
	500.00	55.794	112.200	90.813	−0.185	10.693	−56.285	−16.909	−8.349	0.872
	600.00	58.584	122.619	95.265	5.534	16.412	−68.037	−17.345	−6.592	0.574

References

Phase	H / S	C_p
SOL−B	Mi1	Mi1

AuSn — GOLD TIN — 315.677

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	51.308	98.115	98.115	−30.460	0.000	−59.713	−30.460	−30.288	5.306
	300.00	51.338	98.432	98.116	−30.365	0.095	−59.895	−30.462	−30.287	5.273
	400.00	52.928	113.419	100.148	−25.152	5.308	−70.519	−30.596	−30.210	3.945
	500.00	54.518	125.400	104.039	−19.780	10.680	−82.480	−30.795	−30.092	3.144
	600.00	56.107	135.480	108.461	−14.248	16.212	−95.537	−37.860	−28.623	2.492
	691.00	57.554	143.503	112.558	−9.077	21.383	−108.237	−37.734	−27.229	2.058
			35.482		24.518					
LIQ	691.00	72.802	178.985	112.558	15.441	45.901	−108.237	−13.216	−27.229	2.058
	700.00	72.802	179.927	113.418	16.097	46.557	−109.852	−13.060	−27.413	2.046
	800.00	72.802	189.648	122.353	23.377	53.837	−128.342	−11.354	−29.580	1.931
	900.00	72.802	198.223	130.316	30.657	61.117	−147.744	−9.691	−31.959	1.855

References

Phase	H / S	C_p
SOL	Hu1	Hu1
LIQ	Hu1	Hu1

AuSn2 — GOLD 2−TIN — 434.387

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	83.898	135.562	135.562	−42.426	0.000	−82.844	−42.426	−38.155	6.685
	300.00	83.973	136.081	135.563	−42.271	0.155	−83.095	−42.417	−38.128	6.639
	400.00	88.031	160.794	138.905	−33.671	8.755	−97.988	−41.957	−36.768	4.801
	500.00	92.090	180.874	145.351	−24.664	17.762	−115.101	−41.496	−35.524	3.711
	582.00	95.418	195.105	151.378	−16.977	25.449	−130.528	−54.842	−32.452	2.913

References

Phase	H / S	C_p	Remarks	
SOL	Hu1/Nb1	e	Hu1	DPT= 582. (peritec.)

671.807

GOLD 4–TIN **AuSn4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL	298.15	137.867	250.622	250.622	−38.702	0.000	−113.425	−38.702	−38.208	6.694
	300.00	138.009	251.475	250.624	−38.447	0.255	−113.889	−38.693	−38.205	6.652
	400.00	145.687	292.229	256.129	−24.262	14.440	−141.154	−38.234	−38.111	4.977
	500.00	153.365	325.563	266.778	−9.309	29.393	−172.091	−37.774	−38.134	3.984
	525.00	155.284	333.092	269.758	−5.451	33.251	−180.325	−65.667	−37.047	3.686

References

Phase	H / S	C_p	Remarks	
SOL	Hu1/Nb1	e	Hu1	DPT= 525. (peritec.)

452.167

GOLD DITELLURIDE **AuTe2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL	298.15	76.676	141.712	141.712	−18.619	0.000	−60.870	−18.619	−17.194	3.012
	300.00	76.721	142.187	141.714	−18.477	0.142	−61.133	−18.619	−17.186	2.992
	400.00	79.619	164.637	144.755	−10.666	7.953	−76.521	−18.733	−16.696	2.180
	500.00	82.968	182.759	150.599	−2.539	16.080	−93.918	−19.016	−16.157	1.688
	600.00	86.494	198.196	157.275	5.933	24.552	−112.984	−19.439	−15.548	1.354
	700.00	90.103	211.799	164.111	14.763	33.382	−133.497	−19.991	−14.857	1.109
	737.00	91.451	216.474	166.623	18.121	36.740	−141.420	−55.274	−13.884	0.984

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	Mi1	Mi1	MPT= 737., L= 40.6 kJ

B BORON (BETA) 10.811

Phase	T [K]	C_p J / (K mol)	S J / (K mol)	−(G−H298)/T J / (K mol)	H kJ / mol	H−H298 kJ / mol	G kJ / mol	ΔH_f kJ / mol	ΔG_f kJ / mol	log K_f [−]
SOL−B	298.15	11.316	5.830	5.830	0.000	0.000	−1.738	0.000	0.000	0.000
	300.00	11.403	5.900	5.830	0.021	0.021	−1.749	0.000	0.000	0.000
	400.00	15.699	9.797	6.332	1.386	1.386	−2.533	0.000	0.000	0.000
	500.00	18.715	13.646	7.413	3.116	3.116	−3.707	0.000	0.000	0.000
	600.00	20.775	17.251	8.756	5.097	5.097	−5.254	0.000	0.000	0.000
	700.00	22.250	20.570	10.210	7.252	7.252	−7.147	0.000	0.000	0.000
	800.00	23.364	23.617	11.698	9.535	9.535	−9.359	0.000	0.000	0.000
	900.00	24.248	26.422	13.181	11.917	11.917	−11.863	0.000	0.000	0.000
	1000.00	24.979	29.016	14.636	14.380	14.380	−14.636	0.000	0.000	0.000
	1100.00	25.607	31.427	16.054	16.910	16.910	−17.660	0.000	0.000	0.000
	1200.00	26.160	33.679	17.430	19.499	19.499	−20.916	0.000	0.000	0.000
	1300.00	26.661	35.793	18.762	22.140	22.140	−24.391	0.000	0.000	0.000
	1400.00	27.123	37.786	20.050	24.830	24.830	−28.071	0.000	0.000	0.000
	1500.00	27.555	39.672	21.296	27.564	27.564	−31.944	0.000	0.000	0.000
	1600.00	27.964	41.464	22.501	30.340	30.340	−36.002	0.000	0.000	0.000
	1700.00	28.356	43.171	23.667	33.156	33.156	−40.234	0.000	0.000	0.000
	1800.00	28.733	44.802	24.796	36.010	36.010	−44.634	0.000	0.000	0.000
	1900.00	29.098	46.366	25.891	38.902	38.902	−49.192	0.000	0.000	0.000
	2000.00	29.454	47.867	26.952	41.830	41.830	−53.905	0.000	0.000	0.000
	2100.00	29.801	49.313	27.983	44.793	44.793	−58.764	0.000	0.000	0.000
	2200.00	30.141	50.707	28.984	47.790	47.790	−63.765	0.000	0.000	0.000
	2300.00	30.474	52.054	29.958	50.820	50.820	−68.904	0.000	0.000	0.000
	2400.00	31.750	74.745	31.351	104.144	104.144	−75.244	0.000	0.000	0.000
	2500.00	31.750	76.041	33.113	107.319	107.319	−82.783	0.000	0.000	0.000
	2600.00	31.750	77.286	34.788	110.494	110.494	−90.450	0.000	0.000	0.000
	2700.00	31.750	78.484	36.385	113.669	113.669	−98.239	0.000	0.000	0.000
	2800.00	31.750	79.639	37.909	116.844	116.844	−106.145	0.000	0.000	0.000
	2900.00	31.750	80.753	39.367	120.019	120.019	−114.165	0.000	0.000	0.000
	3000.00	31.750	81.830	40.765	123.194	123.194	−122.295	0.000	0.000	0.000
	3100.00	31.750	82.871	42.106	126.369	126.369	−130.530	0.000	0.000	0.000
	3200.00	31.750	83.879	43.396	129.544	129.544	−138.868	0.000	0.000	0.000
	3300.00	31.750	84.856	44.638	132.719	132.719	−147.305	0.000	0.000	0.000
	3400.00	31.750	85.803	45.835	135.894	135.894	−155.838	0.000	0.000	0.000
	3500.00	31.750	86.724	46.990	139.069	139.069	−164.465	0.000	0.000	0.000
	3600.00	31.750	87.618	48.106	142.244	142.244	−173.182	0.000	0.000	0.000
	3700.00	31.750	88.488	49.186	145.419	145.419	−181.987	0.000	0.000	0.000
	3800.00	31.750	89.335	50.231	148.594	148.594	−190.879	0.000	0.000	0.000
	3900.00	31.750	90.160	51.245	151.769	151.769	−199.854	0.000	0.000	0.000
	4000.00	31.750	90.963	52.227	154.944	154.944	−208.910	0.000	0.000	0.000
	4100.00	31.750	91.747	53.182	158.119	158.119	−218.046	0.000	0.000	0.000
	4139.45	31.750	92.051	53.551	159.371	159.371	−221.671	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks
SOL−B	Ja2	Ja2	Ja2 BPT= 4139.449, L= 480.509 kJ

10.811

BORON (GAS)

B[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	20.796	153.435	153.435	560.000	0.000	514.253	560.000	515.992	−90.400
	300.00	20.796	153.564	153.435	560.038	0.038	513.969	560.017	515.718	−89.795
	400.00	20.792	159.546	154.251	562.118	2.118	498.300	560.732	500.832	−65.402
	500.00	20.790	164.185	155.791	564.197	4.197	482.104	561.081	485.811	−50.752
	600.00	20.789	167.975	157.516	566.276	6.276	465.491	561.179	470.744	−40.982
	700.00	20.788	171.180	159.245	568.355	8.355	448.529	561.103	455.676	−34.003
	800.00	20.787	173.956	160.914	570.433	10.433	431.269	560.898	440.628	−28.770
	900.00	20.787	176.404	162.502	572.512	12.512	413.749	560.595	425.611	−24.702
	1000.00	20.787	178.594	164.003	574.591	14.591	395.997	560.211	410.633	−21.449
	1100.00	20.787	180.575	165.421	576.669	16.669	378.037	559.760	395.696	−18.790
	1200.00	20.787	182.384	166.760	578.748	18.748	359.887	559.250	380.804	−16.576
	1300.00	20.787	184.048	168.027	580.827	20.827	341.565	558.687	365.956	−14.704
	1400.00	20.787	185.588	169.227	582.905	22.905	323.082	558.076	351.153	−13.102
	1500.00	20.787	187.022	170.366	584.984	24.984	304.451	557.420	336.395	−11.714
	1600.00	20.786	188.364	171.450	587.063	27.063	285.681	556.723	321.683	−10.502
	1700.00	20.786	189.624	172.482	589.141	29.141	266.781	555.985	307.015	−9.433
	1800.00	20.786	190.812	173.468	591.220	31.220	247.758	555.210	292.392	−8.485
	1900.00	20.786	191.936	174.410	593.299	33.299	228.620	554.397	277.813	−7.638
	2000.00	20.786	193.002	175.313	595.377	35.377	209.373	553.547	263.278	−6.876
	2100.00	20.786	194.016	176.180	597.456	37.456	190.022	552.663	248.786	−6.188
	2200.00	20.786	194.983	177.013	599.534	39.534	170.571	551.745	234.337	−5.564
	2300.00	20.786	195.907	177.815	601.613	41.613	151.027	550.792	219.930	−4.995
	2400.00	20.786	196.792	178.587	603.691	43.691	131.391	499.548	206.635	−4.497
	2500.00	20.786	197.640	179.332	605.770	45.770	111.669	498.451	194.453	−4.063
	2600.00	20.786	198.456	180.052	607.849	47.849	91.864	497.355	182.314	−3.663
	2700.00	20.787	199.240	180.748	609.927	49.927	71.979	496.259	170.218	−3.293
	2800.00	20.788	199.996	181.422	612.006	52.006	52.017	495.162	158.163	−2.951
	2900.00	20.788	200.725	182.076	614.085	54.085	31.981	494.066	146.146	−2.632
	3000.00	20.790	201.430	182.709	616.164	56.164	11.873	492.970	134.168	−2.336
	3100.00	20.791	202.112	183.324	618.243	58.243	−8.304	491.874	122.226	−2.059
	3200.00	20.793	202.772	183.921	620.322	60.322	−28.549	490.778	110.319	−1.801
	3300.00	20.795	203.412	184.502	622.401	62.401	−48.858	489.683	98.447	−1.558
	3400.00	20.798	204.033	185.068	624.481	64.481	−69.230	488.587	86.608	−1.331
	3500.00	20.803	204.636	185.618	626.561	66.561	−89.664	487.492	74.801	−1.116
	3600.00	20.808	205.222	186.155	628.642	68.642	−110.157	486.398	63.025	−0.914
	3700.00	20.814	205.792	186.678	630.723	70.723	−130.708	485.304	51.280	−0.724
	3800.00	20.822	206.347	187.188	632.804	72.804	−151.315	484.211	39.564	−0.544
	3900.00	20.831	206.888	187.686	634.887	74.887	−171.977	483.118	27.877	−0.373
	4000.00	20.842	207.416	188.173	636.971	76.971	−192.692	482.027	16.218	−0.212
	4100.00	20.855	207.931	188.649	639.056	79.056	−213.460	480.937	4.586	−0.058
	4200.00	20.870	208.433	189.114	641.142	81.142	−234.278	0.000	0.000	0.000
	4300.00	20.887	208.925	189.569	643.230	83.230	−255.146	0.000	0.000	0.000
	4400.00	20.906	209.405	190.014	645.319	85.319	−276.062	0.000	0.000	0.000
	4500.00	20.928	209.875	190.450	647.411	87.411	−297.026	0.000	0.000	0.000
	4600.00	20.952	210.335	190.878	649.505	89.505	−318.037	0.000	0.000	0.000
	4700.00	20.979	210.786	191.296	651.601	91.601	−339.093	0.000	0.000	0.000
	4800.00	21.009	211.228	191.707	653.701	93.701	−360.194	0.000	0.000	0.000
	4900.00	21.042	211.662	192.110	655.803	95.803	−381.338	0.000	0.000	0.000
	5000.00	21.078	212.087	192.505	657.909	97.909	−402.526	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Ja2	Ja2

B[GL] BORON (GLASS) 10.811

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL-GL	298.15	11.320	26.555	26.555	48.927	0.000	41.010	48.927	42.748	−7.489
	300.00	11.400	26.625	26.555	48.948	0.021	40.960	48.927	42.709	−7.436
	400.00	15.691	30.512	27.056	50.310	1.383	38.105	48.924	40.638	−5.307
	500.00	18.721	34.362	28.135	52.041	3.114	34.859	48.924	38.566	−4.029
	600.00	20.778	37.968	29.477	54.022	5.095	31.241	48.925	36.494	−3.177
	700.00	22.249	41.288	30.931	56.177	7.250	27.275	48.925	34.423	−2.569
	800.00	23.361	44.335	32.419	58.460	9.533	22.992	48.925	32.351	−2.112
	900.00	24.245	47.139	33.901	60.842	11.915	18.416	48.924	30.279	−1.757
	1000.00	24.978	49.733	35.356	63.304	14.377	13.571	48.924	28.207	−1.473
	1100.00	25.606	52.143	36.774	65.834	16.907	8.476	48.924	26.136	−1.241
	1200.00	26.161	54.396	38.149	68.423	19.496	3.148	48.924	24.064	−1.047
	1300.00	26.663	56.510	39.481	71.064	22.137	−2.398	48.924	21.992	−0.884
	1400.00	27.125	58.503	40.769	73.754	24.827	−8.150	48.924	19.921	−0.743
	1500.00	27.557	60.389	42.015	76.488	27.561	−14.095	48.925	17.849	−0.622
	1600.00	27.966	62.181	43.220	79.264	30.337	−20.225	48.925	15.777	−0.515
	1700.00	28.356	63.888	44.386	82.081	33.154	−26.529	48.925	13.705	−0.421
	1750.00	28.546	64.713	44.955	83.503	34.576	−29.744	48.925	12.670	−0.378

References

Phase	H / S	C_p	Remarks
SOL–GL	Ja2	Ja2	Ja2 Glass – Liquid transition at 2350 K

90.715

BORON MONOBROMIDE (GAS) **BBr**[g]

Phase	T [K]	C_p	S	$-(G-H_{298})/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	32.663	224.999	224.999	234.304	0.000	167.220	234.304	191.649	−33.576
	300.00	32.716	225.202	225.000	234.364	0.060	166.804	234.273	191.385	−33.323
	400.00	34.620	234.912	226.311	237.744	3.440	143.780	219.047	180.221	−23.534
	500.00	35.544	242.747	228.840	241.257	6.953	119.884	218.984	170.517	−17.814
	600.00	36.082	249.279	231.718	244.841	10.537	95.273	218.727	160.845	−14.003
	700.00	36.438	254.869	234.635	248.468	14.164	70.059	218.332	151.227	−11.285
	800.00	36.697	259.752	237.476	252.125	17.821	44.323	217.832	141.674	−9.250
	900.00	36.900	264.087	240.197	255.805	21.501	18.127	217.252	132.188	−7.672
	1000.00	37.067	267.983	242.784	259.504	25.200	−8.480	216.605	122.771	−6.413
	1100.00	37.212	271.523	245.238	263.218	28.914	−35.458	215.903	113.421	−5.386
	1200.00	37.341	274.767	247.565	266.946	32.642	−62.774	215.152	104.137	−4.533
	1300.00	37.459	277.760	249.774	270.686	36.382	−90.403	214.357	94.918	−3.814
	1400.00	37.569	280.540	251.874	274.437	40.133	−118.319	213.524	85.762	−3.200
	1500.00	37.673	283.136	253.872	278.199	43.895	−146.505	212.653	76.666	−2.670
	1600.00	37.773	285.571	255.778	281.972	47.668	−174.941	211.748	67.629	−2.208
	1700.00	37.869	287.864	257.599	285.754	51.450	−203.614	210.810	58.650	−1.802
	1800.00	37.963	290.031	259.341	289.546	55.242	−232.510	209.841	49.728	−1.443
	1900.00	38.054	292.086	261.011	293.346	59.042	−261.617	208.841	40.860	−1.123
	2000.00	38.144	294.040	262.614	297.156	62.852	−290.924	207.812	32.045	−0.837

References

Phase	H / S	C_p
GAS	Ja1	Ja1

BBr2[g] BORON DIBROMIDE (GAS) 170.619

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
GAS	298.15	47.760	294.671	294.671	62.760	0.000	−25.096	62.760	22.023	−3.858
	300.00	47.871	294.967	294.672	62.848	0.088	−25.642	62.687	21.771	−3.791
	400.00	51.804	309.357	296.607	67.860	5.100	−55.883	31.852	14.466	−1.889
	500.00	53.675	321.139	300.372	73.143	10.383	−87.426	31.713	10.133	−1.059
	600.00	54.735	331.027	304.680	78.568	15.808	−120.048	31.439	5.841	−0.508
	700.00	55.412	339.519	309.065	84.078	21.318	−153.585	31.058	1.603	−0.120
	800.00	55.885	346.951	313.346	89.644	26.884	−187.917	30.593	−2.574	0.168
	900.00	56.239	353.554	317.453	95.251	32.491	−222.948	30.061	−6.688	0.388
	1000.00	56.519	359.495	321.365	100.889	38.129	−258.605	29.471	−10.740	0.561
	1100.00	56.751	364.893	325.081	106.553	43.793	−294.829	28.832	−14.731	0.700
	1200.00	56.950	369.839	328.607	112.238	49.478	−331.569	28.149	−18.661	0.812
	1300.00	57.126	374.405	331.957	117.942	55.182	−368.784	27.426	−22.533	0.905
	1400.00	57.285	378.644	335.142	123.663	60.903	−406.439	26.665	−26.348	0.983
	1500.00	57.432	382.602	338.176	129.399	66.639	−444.503	25.870	−30.107	1.048
	1600.00	57.570	386.313	341.069	135.149	72.389	−482.951	25.042	−33.812	1.104
	1700.00	57.700	389.807	343.835	140.913	78.153	−521.759	24.181	−37.464	1.151
	1800.00	57.824	393.108	346.481	146.689	83.929	−560.906	23.290	−41.064	1.192
	1900.00	57.944	396.238	349.018	152.477	89.717	−600.375	22.369	−44.615	1.227
	2000.00	58.061	399.213	351.454	158.278	95.518	−640.148	21.418	−48.116	1.257

References

Phase	H / S	C_p
GAS	Ja1	Ja1

BBr3 BORON TRIBROMIDE 250.523

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
LIQ	298.15	128.030	228.865	228.865	−238.488	0.000	−306.724	−238.488	−236.914	41.506
	300.00	128.030	229.657	228.867	−238.251	0.237	−307.148	−238.482	−236.904	41.249
	400.00	128.030	266.489	233.889	−225.448	13.040	−332.044	−278.767	−227.786	29.746

References

Phase	H / S	C_p	Remarks	
LIQ	Ja1	Ja1	Ja1	BPT= 363.9, L= 30.5 kJ

250.523

BORON TRIBROMIDE (GAS) **BBr3**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	67.779	324.315	324.315	−204.179	0.000	−300.874	−204.179	−231.063	40.481
	300.00	67.881	324.735	324.316	−204.054	0.125	−301.474	−204.284	−231.230	40.261
	400.00	72.600	344.952	327.041	−197.015	7.164	−334.995	−250.334	−230.738	30.131
	500.00	75.656	361.506	332.328	−189.590	14.589	−370.343	−250.178	−225.858	23.595
	600.00	77.609	375.485	338.387	−181.920	22.259	−407.211	−250.066	−221.005	19.240
	700.00	78.908	387.553	344.568	−174.090	30.089	−445.377	−249.994	−216.167	16.131
	800.00	79.808	398.152	350.617	−166.151	38.028	−484.673	−249.960	−211.338	13.799
	900.00	80.454	407.591	356.433	−158.137	46.042	−524.969	−249.963	−206.510	11.986
	1000.00	80.933	416.094	361.981	−150.066	54.113	−566.160	−250.004	−201.680	10.535
	1100.00	81.297	423.825	367.257	−141.954	62.225	−608.162	−250.081	−196.844	9.347
	1200.00	81.580	430.912	372.270	−133.809	70.370	−650.903	−250.194	−192.000	8.358
	1300.00	81.804	437.451	377.036	−125.640	78.539	−694.326	−250.345	−187.145	7.520
	1400.00	81.984	443.520	381.571	−117.450	86.729	−738.378	−250.532	−182.276	6.801
	1500.00	82.131	449.181	385.891	−109.244	94.935	−783.016	−250.756	−177.393	6.177
	1600.00	82.253	454.486	390.015	−101.025	103.154	−828.202	−251.016	−172.494	5.631
	1700.00	82.354	459.476	393.955	−92.794	111.385	−873.903	−251.313	−167.578	5.149
	1800.00	82.440	464.185	397.727	−84.554	119.625	−920.088	−251.647	−162.643	4.720
	1900.00	82.513	468.645	401.343	−76.307	127.872	−966.732	−252.018	−157.688	4.335
	2000.00	82.575	472.879	404.815	−68.052	136.127	−1013.810	−252.426	−152.713	3.988

References

Phase	H / S	C_p
GAS	Ja1	Ja1

B4C TETRABORON MONOCARBIDE 55.255

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	53.096	27.129	27.129	−71.128	0.000	−79.217	−71.128	−70.552	12.360
	300.00	53.640	27.459	27.130	−71.029	0.099	−79.267	−71.129	−70.549	12.284
	400.00	76.340	46.289	29.543	−64.430	6.698	−82.945	−71.026	−70.365	9.189
	500.00	89.857	64.900	34.772	−56.064	15.064	−88.514	−70.913	−70.215	7.335
	600.00	98.255	82.083	41.248	−46.627	24.501	−95.877	−70.979	−70.073	6.100
	700.00	103.749	97.669	48.213	−36.509	34.619	−104.877	−71.259	−69.903	5.216
	800.00	107.672	111.790	55.292	−25.929	45.199	−115.361	−71.736	−69.679	4.550
	900.00	110.951	124.664	62.295	−14.996	56.132	−127.194	−72.364	−69.385	4.027
	1000.00	114.312	136.524	69.132	−3.736	67.392	−140.260	−73.073	−69.016	3.605
	1100.00	117.333	147.562	75.766	7.847	78.975	−154.471	−73.799	−68.576	3.256
	1200.00	120.185	157.895	82.184	19.724	90.852	−169.749	−74.523	−68.069	2.963
	1300.00	122.905	167.623	88.386	31.880	103.008	−186.030	−75.225	−67.502	2.712
	1400.00	125.530	176.828	94.378	44.302	115.430	−203.257	−75.890	−66.883	2.495
	1500.00	128.084	185.576	100.168	56.983	128.111	−221.380	−76.504	−66.218	2.306
	1600.00	130.585	193.922	105.769	69.917	141.045	−240.358	−77.059	−65.514	2.139
	1700.00	133.044	201.913	111.191	83.099	154.227	−260.153	−77.546	−64.777	1.990
	1800.00	135.471	209.586	116.446	96.525	167.653	−280.730	−77.958	−64.014	1.858
	1900.00	137.872	216.975	121.543	110.192	181.320	−302.061	−78.292	−63.229	1.738
	2000.00	140.253	224.108	126.494	124.099	195.227	−324.117	−78.543	−62.430	1.630
	2100.00	142.616	231.008	131.308	138.242	209.370	−346.874	−78.710	−61.620	1.533
	2200.00	144.966	237.697	135.992	152.621	223.749	−370.311	−78.790	−60.804	1.444
	2300.00	147.304	244.192	140.556	167.235	238.363	−394.407	−78.778	−59.986	1.362
	2400.00	149.632	250.511	145.007	182.082	253.210	−419.144	−279.713	−54.895	1.195
	2500.00	151.952	256.666	149.350	197.161	268.289	−444.504	−279.829	−45.525	0.951
	2600.00	154.266	262.671	153.594	212.472	283.600	−470.472	−279.722	−36.154	0.726
	2700.00	156.573	268.536	157.743	228.014	299.142	−497.034	−279.390	−26.792	0.518
	2743.00	157.564	271.018	159.499	234.768	305.896	−508.634	−279.179	−22.770	0.434
			38.133		104.600					
LIQ	2743.00	135.980	309.151	159.499	339.368	410.496	−508.634	−174.579	−22.770	0.434
	2800.00	135.980	311.948	162.574	347.119	418.247	−526.336	−175.503	−19.606	0.366
	2900.00	135.980	316.720	167.808	360.717	431.845	−557.770	−177.130	−14.010	0.252
	3000.00	135.980	321.330	172.849	374.315	445.443	−589.674	−178.763	−8.357	0.146
	3100.00	135.980	325.788	177.711	387.913	459.041	−622.031	−180.402	−2.650	0.045
	3200.00	135.980	330.106	182.406	401.511	472.639	−654.827	−182.049	3.110	−0.051
	3300.00	135.980	334.290	186.945	415.109	486.237	−688.048	−183.701	8.922	−0.141
	3400.00	135.980	338.349	191.339	428.707	499.835	−721.681	−185.360	14.784	−0.227
	3500.00	135.980	342.291	195.596	442.305	513.433	−755.714	−187.025	20.695	−0.309

References

Phase	H / S	C_p
SOL	Nb1,A1	Ja1
LIQ	Ja1	Ja1

46.264

BORON MONOCHLORIDE (GAS) **BCl**[g]

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]				[kJ / mol]				[–]
GAS	298.15	31.446	213.251	213.251	141.419	0.000	77.838	141.419	112.838	–19.769
	300.00	31.509	213.446	213.251	141.477	0.058	77.444	141.425	112.660	–19.616
	400.00	33.739	222.859	214.520	144.755	3.336	55.611	141.604	103.037	–13.455
	500.00	34.831	230.517	216.978	148.189	6.770	32.930	141.522	93.400	–9.757
	600.00	35.474	236.929	219.783	151.706	10.287	9.549	141.241	83.800	–7.295
	700.00	35.906	242.432	222.635	155.277	13.858	–14.425	140.818	74.258	–5.541
	800.00	36.226	247.248	225.417	158.884	17.465	–38.914	140.290	64.784	–4.230
	900.00	36.480	251.530	228.085	162.520	21.101	–63.857	139.680	55.382	–3.214
	1000.00	36.693	255.385	230.625	166.178	24.759	–89.206	139.006	46.051	–2.405
	1100.00	36.879	258.891	233.038	169.857	28.438	–114.923	138.278	36.790	–1.747
	1200.00	37.048	262.107	235.328	173.554	32.135	–140.975	137.504	27.598	–1.201
	1300.00	37.203	265.079	237.504	177.266	35.847	–167.336	136.689	18.472	–0.742
	1400.00	37.350	267.841	239.573	180.994	39.575	–193.984	135.836	9.410	–0.351
	1500.00	37.489	270.423	241.545	184.736	43.317	–220.898	134.950	0.410	–0.014
	1600.00	37.624	272.847	243.426	188.492	47.073	–248.063	134.031	–8.529	0.278
	1700.00	37.754	275.132	245.225	192.261	50.842	–275.463	133.083	–17.410	0.535
	1800.00	37.881	277.293	246.947	196.043	54.624	–303.085	132.105	–26.235	0.761
	1900.00	38.006	279.345	248.598	199.837	58.418	–330.918	131.099	–35.004	0.962
	2000.00	38.129	281.297	250.185	203.644	62.225	–358.951	130.065	–43.720	1.142

References

Phase	H / S	C_p
GAS	Ja1	Ja1

BCl2[g] BORON DICHLORIDE (GAS) 81.716

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	47.379	272.488	272.488	−79.496	0.000	−160.738	−79.496	−92.478	16.202
	300.00	47.455	272.781	272.489	−79.408	0.088	−161.243	−79.492	−92.558	16.116
	400.00	50.904	286.939	274.396	−74.478	5.018	−189.254	−79.394	−96.935	12.658
	500.00	53.080	298.551	278.101	−69.271	10.225	−218.546	−79.488	−101.312	10.584
	600.00	54.449	308.359	282.348	−63.889	15.607	−248.905	−79.722	−105.657	9.198
	700.00	55.347	316.825	286.682	−58.396	21.100	−280.174	−80.061	−109.954	8.205
	800.00	55.961	324.258	290.924	−52.829	26.667	−312.235	−80.482	−114.196	7.456
	900.00	56.398	330.876	295.002	−47.210	32.286	−344.998	−80.971	−118.382	6.871
	1000.00	56.720	336.835	298.892	−41.553	37.943	−378.388	−81.518	−122.510	6.399
	1100.00	56.965	342.253	302.592	−35.869	43.627	−412.347	−82.117	−126.581	6.011
	1200.00	57.158	347.218	306.107	−30.162	49.334	−446.824	−82.763	−130.595	5.685
	1300.00	57.314	351.800	309.448	−24.438	55.058	−481.778	−83.454	−134.553	5.406
	1400.00	57.444	356.052	312.626	−18.700	60.796	−517.173	−84.186	−138.456	5.166
	1500.00	57.557	360.019	315.655	−12.950	66.546	−552.979	−84.959	−142.306	4.956
	1600.00	57.656	363.737	318.545	−7.189	72.307	−589.169	−85.770	−146.103	4.770
	1700.00	57.747	367.235	321.308	−1.419	78.077	−625.719	−86.619	−149.848	4.604
	1800.00	57.833	370.538	323.952	4.360	83.856	−662.609	−87.505	−153.542	4.456
	1900.00	57.915	373.667	326.487	10.147	89.643	−699.821	−88.427	−157.186	4.321
	2000.00	57.995	376.640	328.921	15.943	95.439	−737.337	−89.384	−160.780	4.199

References

Phase	H / S	C_p
GAS	Ja1	Ja1

117.169

BORON TRICHLORIDE (GAS) **BCl3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	62.402	290.178	290.178	−402.961	0.000	−489.478	−402.961	−387.956	67.968
	300.00	62.522	290.564	290.179	−402.845	0.116	−490.015	−402.961	−387.863	67.533
	400.00	68.388	309.395	292.706	−396.286	6.675	−520.044	−402.966	−382.830	49.993
	500.00	72.408	325.118	297.660	−389.232	13.729	−551.791	−402.999	−377.793	39.468
	600.00	75.062	338.570	303.385	−381.850	21.111	−584.992	−403.051	−372.747	32.451
	700.00	76.874	350.286	309.266	−374.247	28.714	−619.447	−403.119	−367.692	27.437
	800.00	78.159	360.639	315.053	−366.492	36.469	−655.004	−403.204	−362.625	23.677
	900.00	79.101	369.902	320.642	−358.627	44.334	−691.539	−403.310	−357.546	20.751
	1000.00	79.811	378.275	325.993	−350.680	52.281	−728.954	−403.437	−352.455	18.410
	1100.00	80.357	385.908	331.098	−342.670	60.291	−767.169	−403.588	−347.350	16.494
	1200.00	80.785	392.919	335.962	−334.612	68.349	−806.115	−403.765	−342.229	14.897
	1300.00	81.125	399.400	340.596	−326.516	76.445	−845.735	−403.969	−337.093	13.545
	1400.00	81.397	405.422	345.014	−318.389	84.572	−885.980	−404.204	−331.940	12.385
	1500.00	81.617	411.046	349.230	−310.238	92.723	−926.807	−404.470	−326.770	11.379
	1600.00	81.797	416.319	353.260	−302.067	100.894	−968.178	−404.769	−321.580	10.499
	1700.00	81.945	421.282	357.117	−293.880	109.081	−1010.060	−405.103	−316.371	9.721
	1800.00	82.068	425.970	360.813	−285.679	117.282	−1052.425	−405.472	−311.141	9.029
	1900.00	82.171	430.410	364.360	−277.467	125.494	−1095.246	−405.878	−305.889	8.409
	2000.00	82.259	434.627	367.769	−269.246	133.715	−1138.499	−406.321	−300.615	7.851
	2100.00	82.336	438.642	371.049	−261.016	141.945	−1182.164	−406.803	−295.318	7.346
	2200.00	82.405	442.474	374.209	−252.779	150.182	−1226.222	−407.323	−289.998	6.885
	2300.00	82.469	446.139	377.258	−244.535	158.426	−1270.654	−407.883	−284.652	6.465
	2400.00	82.531	449.650	380.201	−236.285	166.676	−1315.444	−458.741	−278.213	6.055
	2500.00	82.594	453.020	383.047	−228.029	174.932	−1360.579	−459.458	−270.676	5.655

References

Phase	H / S	C_p
GAS	Ja1	Ja1

BF[g] BORON MONOFLUORIDE (GAS) 29.809

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	29.733	200.481	200.481	–115.897	0.000	–175.670	–115.897	–143.701	25.176
	300.00	29.773	200.665	200.482	–115.842	0.055	–176.042	–115.892	–143.873	25.051
	400.00	31.424	209.477	201.672	–112.775	3.122	–196.566	–115.796	–153.224	20.009
	500.00	32.513	216.613	203.969	–109.575	6.322	–217.882	–116.009	–162.562	16.983
	600.00	33.353	222.618	206.590	–106.280	9.617	–239.851	–116.431	–171.836	14.960
	700.00	34.051	227.813	209.259	–102.909	12.988	–262.378	–116.990	–181.027	13.508
	800.00	34.652	232.400	211.870	–99.473	16.424	–285.393	–117.640	–190.132	12.414
	900.00	35.176	236.512	214.384	–95.981	19.916	–308.842	–118.354	–199.151	11.558
	1000.00	35.635	240.243	216.786	–92.440	23.457	–332.683	–119.116	–208.088	10.869
	1100.00	36.035	243.658	219.076	–88.856	27.041	–356.881	–119.915	–216.947	10.302
	1200.00	36.381	246.809	221.257	–85.235	30.662	–381.406	–120.747	–225.731	9.826
	1300.00	36.674	249.733	223.337	–81.582	34.315	–406.235	–121.609	–234.445	9.420
	1400.00	36.916	252.460	225.321	–77.902	37.995	–431.346	–122.500	–243.092	9.070
	1500.00	37.109	255.014	227.216	–74.200	41.697	–456.721	–123.420	–251.673	8.764
	1600.00	37.253	257.414	229.029	–70.482	45.415	–482.344	–124.373	–260.193	8.494
	1700.00	37.348	259.675	230.766	–66.751	49.146	–508.199	–125.359	–268.651	8.255
	1800.00	37.396	261.812	232.432	–63.014	52.883	–534.275	–126.383	–277.051	8.040
	1900.00	37.395	263.834	234.032	–59.274	56.623	–560.558	–127.446	–285.393	7.846
	2000.00	37.347	265.751	235.570	–55.536	60.361	–587.038	–128.552	–293.677	7.670

References

Phase	H / S	C_p
GAS	Ja1	Ja1

48.808

BORON DIFLUORIDE (GAS) **BF2**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	40.559	246.965	246.965	−589.944	0.000	−663.577	−589.944	−601.375	105.358
	300.00	40.624	247.216	246.966	−589.869	0.075	−664.034	−589.948	−601.446	104.721
	400.00	44.401	259.422	248.605	−585.617	4.327	−689.386	−590.274	−605.236	79.036
	500.00	47.511	269.681	251.821	−581.014	8.930	−715.854	−590.765	−608.922	63.614
	600.00	49.819	278.558	255.554	−576.142	13.802	−743.276	−591.346	−612.499	53.323
	700.00	51.542	286.373	259.409	−571.069	18.875	−771.530	−591.979	−615.975	45.965
	800.00	52.840	293.344	263.223	−565.847	24.097	−800.523	−592.646	−619.358	40.440
	900.00	53.815	299.627	266.925	−560.512	29.432	−830.176	−593.341	−622.656	36.138
	1000.00	54.531	305.336	270.485	−555.093	34.851	−860.429	−594.065	−625.875	32.692
	1100.00	55.117	310.562	273.894	−549.609	40.335	−891.228	−594.817	−629.019	29.870
	1200.00	55.570	315.378	277.153	−544.074	45.870	−922.528	−595.599	−632.094	27.514
	1300.00	55.927	319.841	280.267	−538.498	51.446	−954.291	−596.412	−635.103	25.519
	1400.00	56.217	323.996	283.244	−532.891	57.053	−986.486	−597.256	−638.048	23.806
	1500.00	56.455	327.883	286.092	−527.257	62.687	−1019.082	−598.133	−640.931	22.319
	1600.00	56.655	331.533	288.819	−521.601	68.343	−1052.054	−599.044	−643.755	21.016
	1700.00	56.825	334.973	291.434	−515.927	74.017	−1085.381	−599.987	−646.520	19.865
	1800.00	56.972	338.226	293.944	−510.237	79.707	−1119.043	−600.964	−649.229	18.840
	1900.00	57.100	341.309	296.356	−504.533	85.411	−1153.021	−601.975	−651.883	17.922
	2000.00	57.214	344.241	298.678	−498.817	91.127	−1187.300	−603.019	−654.483	17.093

References

Phase	H / S	C_p
GAS	Ja1	Ja1

BF3[g] BORON TRIFLUORIDE (GAS) 67.806

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	49.994	254.120	254.120	−1136.584	0.000	−1212.350	−1136.584	−1119.917	196.205
	300.00	50.212	254.430	254.121	−1136.491	0.093	−1212.820	−1136.599	−1119.813	194.977
	400.00	58.617	270.158	256.208	−1131.004	5.580	−1239.067	−1137.297	−1114.108	145.488
	500.00	63.540	283.805	260.395	−1124.879	11.705	−1266.782	−1137.948	−1108.236	115.777
	600.00	66.997	295.711	265.311	−1118.344	18.240	−1295.770	−1138.603	−1102.232	95.958
	700.00	69.681	306.247	270.420	−1111.505	25.079	−1325.878	−1139.244	−1096.119	81.793
	800.00	71.881	315.700	275.500	−1104.424	32.160	−1356.984	−1139.855	−1089.917	71.164
	900.00	73.734	324.276	280.450	−1097.140	39.444	−1388.989	−1140.425	−1083.640	62.893
	1000.00	75.314	332.129	285.231	−1089.686	46.898	−1421.815	−1140.953	−1077.301	56.272
	1100.00	76.660	339.372	289.828	−1082.085	54.499	−1455.395	−1141.443	−1070.912	50.853
	1200.00	77.799	346.093	294.240	−1074.361	62.223	−1489.672	−1141.899	−1064.480	46.336
	1300.00	78.746	352.359	298.472	−1066.532	70.052	−1524.598	−1142.332	−1058.011	42.511
	1400.00	79.510	358.223	302.533	−1058.618	77.966	−1560.130	−1142.751	−1051.509	39.232
	1500.00	80.100	363.730	306.431	−1050.636	85.948	−1596.231	−1143.169	−1044.977	36.389
	1600.00	80.520	368.914	310.176	−1042.603	93.981	−1632.866	−1143.597	−1038.417	33.901
	1700.00	80.773	373.804	313.776	−1034.537	102.047	−1670.004	−1144.050	−1031.829	31.704
	1800.00	80.861	378.424	317.241	−1026.454	110.130	−1707.617	−1144.540	−1025.214	29.751
	1900.00	80.788	382.795	320.577	−1018.370	118.214	−1745.680	−1145.082	−1018.570	28.002
	2000.00	80.554	386.933	323.792	−1010.302	126.282	−1784.169	−1145.690	−1011.896	26.428
	2100.00	80.160	390.855	326.893	−1002.265	134.319	−1823.060	−1146.379	−1005.190	25.003
	2200.00	79.607	394.572	329.886	−994.275	142.309	−1862.333	−1147.162	−998.449	23.706
	2273.00	79.104	397.162	332.005	−988.482	148.102	−1891.232	−1147.802	−993.504	22.831

References

Phase	H / S	C_p
GAS	Ja1	Ja1

11.819

BORON MONOHYDRIDE (GAS) **BH**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	29.034	171.863	171.863	449.613	0.000	398.372	449.613	419.592	−73.511
	300.00	29.040	172.042	171.863	449.667	0.054	398.054	449.619	419.405	−73.025
	400.00	29.456	180.450	173.007	452.590	2.977	380.410	449.725	409.307	−53.450
	500.00	29.969	187.077	175.181	455.561	5.948	362.023	449.504	399.223	−41.706
	600.00	30.519	192.589	177.635	458.585	8.972	343.032	449.083	389.203	−33.883
	700.00	31.087	197.336	180.118	461.665	12.052	323.530	448.539	379.265	−28.301
	800.00	31.665	201.525	182.537	464.803	15.190	303.583	447.917	369.410	−24.120
	900.00	32.248	205.288	184.860	467.999	18.386	283.239	447.243	359.637	−20.873
	1000.00	32.835	208.716	187.076	471.253	21.640	262.537	446.533	349.941	−18.279
	1100.00	33.424	211.873	189.189	474.566	24.953	241.505	445.797	340.317	−16.160
	1200.00	34.015	214.807	191.203	477.938	28.325	220.169	445.041	330.761	−14.398
	1300.00	34.606	217.553	193.125	481.369	31.756	198.550	444.270	321.269	−12.909
	1400.00	35.199	220.139	194.963	484.859	35.246	176.664	443.488	311.837	−11.635
	1500.00	35.792	222.588	196.724	488.408	38.795	154.527	442.700	302.461	−10.533

References

Phase	H / S	C_p
GAS	Nb1/La1	La1

27.670

DIBORANE (GAS) **B2H6**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	56.205	232.112	232.112	35.606	0.000	−33.598	35.606	86.765	−15.201
	300.00	56.525	232.461	232.113	35.710	0.104	−34.028	35.508	87.083	−15.162
	400.00	72.332	250.948	234.527	42.174	6.568	−58.205	30.525	105.042	−13.717
	500.00	86.135	268.601	239.591	50.111	14.505	−84.189	26.233	124.184	−12.973
	600.00	98.478	285.417	245.838	59.353	23.747	−111.897	22.726	144.117	−12.546
	700.00	109.547	301.444	252.646	69.764	34.158	−141.246	20.014	164.574	−12.281
	800.00	119.422	316.730	259.709	81.223	45.617	−172.161	18.048	185.368	−12.103
	900.00	128.138	331.310	266.861	93.610	58.004	−204.569	16.747	206.368	−11.977
	1000.00	135.716	345.213	274.007	106.812	71.206	−238.401	16.013	227.481	−11.882
	1100.00	142.166	358.459	281.087	120.716	85.110	−273.590	15.740	248.644	−11.807
	1200.00	147.495	371.066	288.064	135.208	99.602	−310.071	15.820	269.816	−11.745
	1300.00	151.708	383.046	294.914	150.177	114.571	−347.782	16.144	290.970	−11.691
	1400.00	154.808	394.409	301.618	165.513	129.907	−386.660	16.607	312.094	−11.644
	1500.00	156.795	405.164	308.166	181.102	145.496	−426.643	17.104	333.183	−11.602
	1600.00	157.672	415.317	314.549	196.835	161.229	−467.672	17.531	354.240	−11.565

References

Phase	H / S	C_p
GAS	La1	La1

BI[g] BORON MONOIODIDE (GAS) 137.715

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	33.477	232.757	232.757	305.432	0.000	236.036	305.432	255.088	−44.690
	300.00	33.523	232.964	232.757	305.494	0.062	235.605	305.423	254.775	−44.360
	400.00	35.171	242.866	234.096	308.940	3.508	211.794	296.684	238.269	−31.115
	500.00	35.970	250.809	236.671	312.501	7.069	187.097	274.418	225.815	−23.591
	600.00	36.436	257.412	239.593	316.123	10.691	161.676	274.184	216.114	−18.814
	700.00	36.744	263.053	242.551	319.783	14.351	135.646	273.808	206.463	−15.406
	800.00	36.969	267.975	245.428	323.469	18.037	109.089	273.325	196.875	−12.855
	900.00	37.144	272.340	248.180	327.175	21.743	82.070	272.758	187.351	−10.874
	1000.00	37.289	276.261	250.796	330.897	25.465	54.636	272.124	177.895	−9.292
	1100.00	37.415	279.821	253.275	334.633	29.201	26.829	271.432	168.505	−8.002
	1200.00	37.527	283.081	255.625	338.380	32.948	−1.318	270.690	159.181	−6.929
	1300.00	37.629	286.089	257.854	342.138	36.706	−29.778	269.902	149.920	−6.024
	1400.00	37.725	288.881	259.972	345.905	40.473	−58.529	269.074	140.722	−5.250
	1500.00	37.815	291.487	261.987	349.682	44.250	−87.548	268.206	131.584	−4.582
	1600.00	37.902	293.931	263.908	353.468	48.036	−116.821	267.303	122.505	−3.999
	1700.00	37.985	296.231	265.742	357.263	51.831	−146.330	266.365	113.483	−3.487
	1800.00	38.066	298.404	267.497	361.065	55.633	−176.063	265.394	104.518	−3.033
	1900.00	38.146	300.465	269.178	364.876	59.444	−206.007	264.391	95.608	−2.628
	2000.00	38.223	302.423	270.792	368.694	63.262	−236.152	263.357	86.751	−2.266

References

Phase	H / S	C_p
GAS	Ja1	Ja1

264.620

BORON DIIODIDE (GAS) **BI2**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	48.842	309.575	309.575	242.672	0.000	150.372	242.672	186.738	−32.716
	300.00	48.943	309.877	309.576	242.762	0.090	149.799	242.641	186.391	−32.454
	400.00	52.533	324.521	311.548	247.861	5.189	118.053	224.736	168.471	−22.000
	500.00	54.234	336.447	315.373	253.209	10.537	84.985	180.159	158.716	−16.581
	600.00	55.193	346.427	319.740	258.684	16.012	50.828	179.903	154.449	−13.446
	700.00	55.801	354.984	324.178	264.236	21.564	15.747	179.537	150.235	−11.211
	800.00	56.221	362.464	328.506	269.838	27.166	−20.133	179.084	146.079	−9.538
	900.00	56.533	369.104	332.655	275.476	32.804	−56.718	178.560	141.984	−8.241
	1000.00	56.778	375.074	336.603	281.142	38.470	−93.931	177.976	137.950	−7.206
	1100.00	56.978	380.495	340.351	286.831	44.159	−131.714	177.339	133.978	−6.362
	1200.00	57.148	385.460	343.906	292.537	49.865	−170.015	176.656	130.066	−5.662
	1300.00	57.298	390.041	347.281	298.260	55.588	−208.793	175.929	126.213	−5.071
	1400.00	57.431	394.292	350.489	303.996	61.324	−248.012	175.162	122.417	−4.567
	1500.00	57.554	398.258	353.543	309.745	67.073	−287.642	174.357	118.678	−4.133
	1600.00	57.668	401.977	356.455	315.507	72.835	−327.656	173.516	114.993	−3.754
	1700.00	57.775	405.476	359.237	321.279	78.607	−368.030	172.640	111.362	−3.422
	1800.00	57.877	408.781	361.898	327.061	84.389	−408.745	171.730	107.783	−3.128
	1900.00	57.974	411.913	364.449	332.854	90.182	−449.781	170.787	104.256	−2.866
	2000.00	58.069	414.889	366.897	338.656	95.984	−491.122	169.812	100.780	−2.632

References

Phase	H / S	C_p
GAS	Ja1	Ja1

BI3[g] BORON TRIIODIDE (GAS) 391.524

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	70.497	348.729	348.729	71.128	0.000	–32.845	71.128	20.834	–3.650
	300.00	70.636	349.165	348.730	71.259	0.131	–33.491	71.086	20.522	–3.573
	400.00	75.548	370.258	351.573	78.602	7.474	–69.501	44.607	4.861	–0.635
	500.00	77.871	387.393	357.078	86.285	15.157	–107.411	–21.731	1.331	–0.139
	600.00	79.174	401.716	363.357	94.143	23.015	–146.886	–21.480	5.919	–0.515
	700.00	79.997	413.987	369.735	102.105	30.977	–187.686	–21.318	10.471	–0.781
	800.00	80.562	424.708	375.950	110.134	39.006	–229.632	–21.230	15.006	–0.980
	900.00	80.979	434.222	381.906	118.212	47.084	–272.588	–21.204	19.533	–1.134
	1000.00	81.303	442.771	387.572	126.327	55.199	–316.444	–21.233	24.060	–1.257
	1100.00	81.567	450.533	392.949	134.471	63.343	–361.116	–21.311	28.593	–1.358
	1200.00	81.790	457.640	398.048	142.639	71.511	–406.529	–21.434	33.135	–1.442
	1300.00	81.983	464.195	402.887	150.828	79.700	–452.625	–21.598	37.689	–1.514
	1400.00	82.156	470.277	407.486	159.035	87.907	–499.353	–21.801	42.257	–1.577
	1500.00	82.313	475.950	411.863	167.258	96.130	–546.667	–22.042	46.840	–1.631
	1600.00	82.458	481.267	416.037	175.497	104.369	–594.531	–22.319	51.441	–1.679
	1700.00	82.593	486.270	420.022	183.750	112.622	–642.910	–22.631	56.061	–1.723
	1800.00	82.722	490.995	423.835	192.015	120.887	–691.776	–22.976	60.700	–1.761
	1900.00	82.845	495.471	427.489	200.294	129.166	–741.101	–23.355	65.358	–1.797
	2000.00	82.963	499.723	430.995	208.584	137.456	–790.862	–23.767	70.038	–1.829

References

Phase	H / S	C_p
GAS	Ja1	Ja1

24.818 BORON NITRIDE **BN**

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	19.728	14.811	14.811	–254.387	0.000	–258.803	–254.387	–228.501	40.032
	300.00	19.841	14.934	14.812	–254.350	0.037	–258.831	–254.398	–228.340	39.758
	400.00	26.270	21.532	15.668	–252.041	2.346	–260.654	–254.913	–219.571	28.673
	500.00	31.403	27.974	17.489	–249.145	5.242	–263.132	–255.216	–210.696	22.011
	600.00	35.193	34.051	19.749	–245.806	8.581	–266.236	–255.350	–201.777	17.566
	700.00	38.101	39.704	22.201	–242.135	12.252	–269.928	–255.356	–192.846	14.390
	800.00	40.452	44.950	24.721	–238.204	16.183	–274.164	–255.262	–183.921	12.009
	900.00	42.587	49.841	27.243	–234.049	20.338	–278.906	–255.077	–175.014	10.158
	1000.00	44.367	54.423	29.735	–229.698	24.689	–284.122	–254.809	–166.131	8.678
	1100.00	45.786	58.721	32.176	–225.188	29.199	–289.781	–254.477	–157.279	7.469
	1200.00	46.882	62.754	34.558	–220.552	33.835	–295.857	–254.105	–148.459	6.462
	1300.00	47.702	66.541	36.874	–215.820	38.567	–302.324	–253.712	–139.671	5.612
	1400.00	48.288	70.099	39.122	–211.019	43.368	–309.158	–253.317	–130.914	4.884
	1500.00	48.677	73.445	41.300	–206.169	48.218	–316.336	–252.936	–122.184	4.255
	1600.00	48.900	76.594	43.408	–201.289	53.098	–323.840	–252.581	–113.479	3.705
	1700.00	48.980	79.562	45.448	–196.394	57.993	–331.649	–252.265	–104.795	3.220
	1800.00	48.936	82.361	47.422	–191.498	62.889	–339.747	–251.997	–96.129	2.790
	1900.00	48.953	85.007	49.331	–186.602	67.785	–348.116	–251.778	–87.476	2.405
	2000.00	48.953	87.518	51.178	–181.707	72.680	–356.744	–251.605	–78.833	2.059
	2100.00	48.953	89.907	52.966	–176.812	77.575	–365.616	–251.475	–70.197	1.746
	2200.00	48.953	92.184	54.697	–171.916	82.471	–374.721	–251.387	–61.567	1.462
	2300.00	48.953	94.360	56.375	–167.021	87.366	–384.049	–251.339	–52.940	1.202
	2400.00	48.953	96.444	58.001	–162.126	92.261	–393.590	–301.590	–43.246	0.941
	2500.00	48.953	98.442	59.579	–157.231	97.156	–403.335	–301.697	–32.479	0.679
	2600.00	48.953	100.362	61.111	–152.335	102.052	–413.276	–301.810	–21.709	0.436

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1	Ja1	NDPT= 2600. (2 BN = 2 B + N2)

B2O3 BORON OXIDE 69.620

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	62.593	53.953	53.953	−1271.936	0.000	−1288.022	−1271.936	−1192.799	208.973
	300.00	62.922	54.341	53.954	−1271.820	0.116	−1288.122	−1271.943	−1192.308	207.599
	400.00	77.949	74.614	56.617	−1264.737	7.199	−1294.583	−1272.047	−1165.732	152.229
	500.00	89.285	93.280	62.110	−1256.351	15.585	−1302.991	−1271.710	−1139.185	119.010
	600.00	98.117	110.372	68.750	−1246.963	24.973	−1313.186	−1271.023	−1112.739	96.873
	700.00	105.225	126.048	75.832	−1236.785	35.151	−1325.018	−1270.037	−1086.432	81.071
	723.00	106.694	129.473	77.484	−1234.348	37.588	−1327.957	−1269.771	−1080.404	78.056
			33.293		24.071					
LIQ	723.00	129.704	162.766	77.484	−1210.277	61.659	−1327.957	−1245.700	−1080.404	78.056
	800.00	129.704	175.893	86.334	−1200.289	71.647	−1341.004	−1243.113	−1062.935	69.403
	900.00	129.704	191.170	97.151	−1187.319	84.617	−1359.372	−1240.015	−1040.601	60.395
	1000.00	129.704	204.835	107.248	−1174.349	97.587	−1379.184	−1237.162	−1018.599	53.206
	1100.00	129.704	217.197	116.690	−1161.378	110.558	−1400.295	−1234.516	−996.873	47.338
	1200.00	129.704	228.483	125.543	−1148.408	123.528	−1422.588	−1232.046	−975.379	42.457
	1300.00	129.704	238.865	133.866	−1135.437	136.499	−1445.962	−1229.733	−954.085	38.336
	1400.00	129.704	248.477	141.714	−1122.467	149.469	−1470.335	−1227.562	−932.963	34.809
	1500.00	129.704	257.426	149.133	−1109.497	162.439	−1495.635	−1225.521	−911.993	31.758
	1600.00	129.704	265.797	156.166	−1096.526	175.410	−1521.801	−1223.604	−891.154	29.093
	1700.00	129.704	273.660	162.848	−1083.556	188.380	−1548.778	−1221.804	−870.431	26.745
	1800.00	129.704	281.074	169.212	−1070.585	201.351	−1576.518	−1220.116	−849.812	24.661
	1900.00	129.704	288.086	175.286	−1057.615	214.321	−1604.979	−1218.538	−829.283	22.799
	2000.00	129.704	294.739	181.094	−1044.645	227.291	−1634.123	−1217.067	−808.834	21.125
	2100.00	129.704	301.068	186.657	−1031.674	240.262	−1663.916	−1215.701	−788.457	19.612
	2200.00	129.704	307.101	191.996	−1018.704	253.232	−1694.327	−1214.437	−768.142	18.238
	2300.00	129.704	312.867	197.127	−1005.733	266.203	−1725.327	−1213.274	−747.882	16.985
	2400.00	129.704	318.387	202.065	−992.763	279.173	−1756.892	−1312.730	−725.533	15.791
	2500.00	129.704	323.682	206.825	−979.793	292.143	−1788.997	−1311.921	−701.083	14.648
	2600.00	129.704	328.769	211.418	−966.822	305.114	−1821.622	−1311.145	−676.665	13.594
	2700.00	129.704	333.664	215.855	−953.852	318.084	−1854.745	−1310.401	−652.276	12.619
	2800.00	129.704	338.381	220.147	−940.881	331.055	−1888.348	−1309.687	−627.914	11.714
	2900.00	129.704	342.933	224.303	−927.911	344.025	−1922.415	−1309.003	−603.578	10.872
	3000.00	129.704	347.330	228.331	−914.941	356.995	−1956.930	−1308.348	−579.264	10.086

References

Phase	H / S	C_p	Remarks	
SOL	Ja2	Ja2		
LIQ	Ja2	Ja2	Ja2,e	BPT= 2339., L= 361.1 kJ

69.620

BORON OXIDE (IDEAL GAS) **B2O3**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	66.854	283.768	283.768	−835.963	0.000	−920.568	−835.963	−825.345	144.597
	300.00	67.028	284.182	283.769	−835.839	0.124	−921.094	−835.963	−825.279	143.694
	400.00	74.723	304.587	286.499	−828.728	7.235	−950.563	−836.038	−821.712	107.305
	500.00	80.364	321.895	291.891	−820.961	15.002	−981.908	−836.320	−818.102	85.467
	600.00	84.819	336.955	298.173	−812.694	23.269	−1014.867	−836.754	−814.420	70.902
	700.00	88.437	350.311	304.686	−804.025	31.938	−1049.243	−837.277	−810.657	60.492
	800.00	91.401	362.320	311.152	−795.028	40.935	−1084.885	−837.852	−806.816	52.680
	900.00	93.833	373.231	317.453	−785.763	50.200	−1121.670	−838.458	−802.900	46.599
	1000.00	95.821	383.224	323.537	−776.277	59.686	−1159.500	−839.090	−798.915	41.731
	1100.00	97.459	392.436	329.387	−766.610	69.353	−1198.289	−839.747	−794.866	37.745
	1200.00	98.818	400.976	335.002	−756.794	79.169	−1237.965	−840.432	−790.756	34.421
	1300.00	99.950	408.932	340.386	−746.854	89.109	−1278.465	−841.150	−786.588	31.605
	1400.00	100.898	416.374	345.551	−736.810	99.153	−1319.734	−841.905	−782.363	29.190
	1500.00	101.697	423.364	350.508	−726.679	109.284	−1361.725	−842.704	−778.082	27.095
	1600.00	102.376	429.949	355.269	−716.475	119.488	−1404.393	−843.552	−773.746	25.260
	1700.00	102.956	436.174	359.847	−706.207	129.756	−1447.702	−844.455	−769.356	23.639
	1800.00	103.454	442.073	364.252	−695.886	140.077	−1491.617	−845.417	−764.911	22.197
	1900.00	103.886	447.678	368.497	−685.519	150.444	−1536.107	−846.442	−760.411	20.905
	2000.00	104.262	453.017	372.591	−675.111	160.852	−1581.144	−847.534	−755.855	19.741
	2100.00	104.590	458.112	376.543	−664.668	171.295	−1626.702	−848.694	−751.243	18.686
	2200.00	104.880	462.984	380.362	−654.194	181.769	−1672.759	−849.927	−746.574	17.726
	2300.00	105.135	467.652	384.056	−643.693	192.270	−1719.292	−851.234	−741.847	16.848
	2400.00	105.362	472.131	387.633	−633.168	202.795	−1766.283	−953.135	−734.924	15.995
	2500.00	105.564	476.437	391.100	−622.621	213.342	−1813.713	−954.750	−725.799	15.165
	2600.00	105.745	480.580	394.462	−612.056	223.907	−1861.565	−956.379	−716.609	14.397
	2700.00	105.908	484.574	397.726	−601.473	234.490	−1909.824	−958.022	−707.355	13.685
	2800.00	106.054	488.429	400.897	−590.875	245.088	−1958.475	−959.681	−698.041	13.022
	2900.00	106.186	492.153	403.980	−580.263	255.700	−2007.505	−961.355	−688.667	12.404
	3000.00	106.306	495.755	406.980	−569.638	266.325	−2056.902	−963.046	−679.236	11.827
	3100.00	106.415	499.242	409.900	−559.002	276.961	−2106.652	−964.753	−669.747	11.285
	3200.00	106.515	502.622	412.745	−548.355	287.608	−2156.747	−966.477	−660.203	10.777
	3300.00	106.606	505.901	415.518	−537.699	298.264	−2207.174	−968.217	−650.606	10.298
	3400.00	106.689	509.085	418.224	−527.034	308.929	−2257.924	−969.974	−640.955	9.847
	3500.00	106.766	512.179	420.864	−516.361	319.602	−2308.988	−971.747	−631.252	9.421
	3600.00	106.836	515.188	423.443	−505.681	330.282	−2360.357	−973.536	−621.498	9.018
	3700.00	106.901	518.116	425.962	−494.994	340.969	−2412.022	−975.340	−611.694	8.636
	3800.00	106.961	520.967	428.425	−484.301	351.662	−2463.977	−977.160	−601.842	8.273
	3900.00	107.017	523.746	430.833	−473.602	362.361	−2516.213	−978.994	−591.941	7.928
	4000.00	107.069	526.457	433.190	−462.898	373.065	−2568.724	−980.843	−581.993	7.600
	4100.00	107.117	529.101	435.497	−452.189	383.774	−2621.503	−982.706	−571.999	7.287
	4200.00	107.162	531.683	437.757	−441.475	394.488	−2674.542	−1944.280	−547.921	6.814
	4300.00	107.203	534.205	439.971	−430.756	405.207	−2727.837	−1943.998	−514.678	6.252
	4400.00	107.242	536.670	442.141	−420.034	415.929	−2781.381	−1943.733	−481.441	5.715
	4500.00	107.279	539.080	444.268	−409.308	426.655	−2835.169	−1943.488	−448.210	5.203
	4600.00	107.313	541.439	446.355	−398.578	437.385	−2889.196	−1943.261	−414.984	4.712
	4700.00	107.345	543.747	448.403	−387.846	448.117	−2943.455	−1943.055	−381.763	4.243
	4800.00	107.375	546.007	450.413	−377.110	458.853	−2997.943	−1942.871	−348.546	3.793
	4900.00	107.403	548.221	452.386	−366.371	469.592	−3052.655	−1942.709	−315.332	3.361
	5000.00	107.430	550.391	454.325	−355.629	480.334	−3107.586	−1942.570	−282.122	2.947

Phase	H / S	C_p	Remarks
SOL	Ja2	Ja2	
LIQ	Ja2	Ja2	Ja2,e BPT= 2339., L= 361.1 kJ

B2O3[g] BORON OXIDE (IDEAL GAS) [continued] 69.620

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	5100.00	107.455	552.519	456.229	−344.885	491.078	−3162.732	−1942.457	−248.914	2.549
	5200.00	107.479	554.606	458.101	−334.138	501.825	−3218.089	−1942.371	−215.708	2.167
	5300.00	107.501	556.653	459.941	−323.389	512.574	−3273.652	−1942.313	−182.504	1.799
	5400.00	107.523	558.663	461.751	−312.638	523.325	−3329.418	−1942.285	−149.300	1.444
	5500.00	107.543	560.636	463.531	−301.884	534.079	−3385.383	−1942.290	−116.097	1.103
	5600.00	107.562	562.574	465.282	−291.129	544.834	−3441.544	−1942.328	−82.893	0.773
	5700.00	107.580	564.478	467.006	−280.372	555.591	−3497.897	−1942.403	−49.688	0.455
	5800.00	107.597	566.349	468.703	−269.613	566.350	−3554.439	−1942.517	−16.482	0.148
	5900.00	107.614	568.189	470.373	−258.853	577.110	−3611.166	−1942.672	16.727	−0.148
	6000.00	107.629	569.997	472.019	−248.091	587.872	−3668.075	−1942.870	49.939	−0.435

References

Phase	H / S	C_p	Remarks	
SOL	Ja2	Ja2		
LIQ	Ja2	Ja2	Ja2,e	BPT= 2339., L= 361.1 kJ

B2O3[GL] BORON OXIDE (GLASS) 69.620

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL-GL	298.15	62.802	78.450	78.450	−1253.359	0.000	−1276.749	−1253.359	−1181.526	206.998
	300.00	63.095	78.839	78.451	−1253.243	0.116	−1276.894	−1253.366	−1181.080	205.644
	400.00	77.404	99.239	81.132	−1246.116	7.243	−1285.812	−1253.426	−1156.962	151.084
	500.00	89.203	117.516	86.608	−1237.905	15.454	−1296.663	−1253.264	−1132.857	118.349
	600.00	132.842	136.921	93.317	−1227.197	26.162	−1309.349	−1251.257	−1108.902	96.538
	700.00	129.788	157.113	101.031	−1214.102	39.257	−1324.081	−1247.354	−1085.495	81.001
	723.00	129.704	161.307	102.882	−1211.118	42.241	−1327.743	−1246.541	−1080.190	78.041

References

Phase	H / S	C_p	Remarks	
SOL−GL	Ja1	Ja2	Ja2	Crystal: Melting Point = 723 K

62.263

BORON CHLORIDE OXIDE (GAS) **BOCl[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	44.899	237.426	237.426	−316.310	0.000	−387.099	−316.310	−321.517	56.328
	300.00	45.003	237.704	237.427	−316.227	0.083	−387.538	−316.306	−321.549	55.987
	400.00	49.037	251.264	239.248	−311.504	4.806	−412.009	−316.167	−323.322	42.221
	500.00	51.450	262.484	242.806	−306.471	9.839	−437.713	−316.180	−325.112	33.964
	600.00	53.179	272.024	246.900	−301.236	15.074	−464.450	−316.323	−326.886	28.458
	700.00	54.545	280.328	251.095	−295.847	20.463	−492.077	−316.555	−328.630	24.523
	800.00	55.681	287.687	255.218	−290.335	25.975	−520.484	−316.846	−330.335	21.569
	900.00	56.651	294.303	259.199	−284.717	31.593	−549.589	−317.176	−332.002	19.269
	1000.00	57.491	300.316	263.015	−279.009	37.301	−579.325	−317.532	−333.630	17.427
	1100.00	58.218	305.831	266.660	−273.222	43.088	−609.636	−317.907	−335.222	15.918
	1200.00	58.843	310.924	270.139	−267.369	48.941	−640.477	−318.299	−336.779	14.660
	1300.00	59.376	315.655	273.461	−261.457	54.853	−671.809	−318.707	−338.303	13.593
	1400.00	59.819	320.072	276.634	−255.496	60.814	−703.598	−319.133	−339.794	12.678
	1500.00	60.177	324.212	279.669	−249.496	66.814	−735.814	−319.581	−341.254	11.884
	1600.00	60.451	328.105	282.576	−243.464	72.846	−768.432	−320.057	−342.684	11.187
	1700.00	60.644	331.776	285.363	−237.408	78.902	−801.428	−320.565	−344.083	10.572
	1800.00	60.756	335.246	288.039	−231.338	84.972	−834.781	−321.112	−345.450	10.025
	1900.00	60.789	338.532	290.611	−225.260	91.050	−868.471	−321.704	−346.787	9.534
	2000.00	60.742	341.649	293.086	−219.182	97.128	−902.481	−322.349	−348.090	9.091
	2100.00	60.617	344.610	295.469	−213.114	103.196	−936.796	−323.052	−349.360	8.690
	2200.00	60.413	347.426	297.768	−207.062	109.248	−971.399	−323.821	−350.595	8.324

References

Phase	H / S	C_p
GAS	Ja1	Ja1

41.785

BORON MONOPHOSPHIDE **BP**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	30.249	26.778	26.778	−78.998	0.000	−86.982	−78.998	−72.999	12.789
	300.00	30.301	26.965	26.778	−78.942	0.056	−87.031	−79.007	−72.961	12.704
	400.00	33.104	36.066	28.000	−75.772	3.226	−90.198	−80.453	−70.666	9.228
	500.00	35.907	43.754	30.400	−72.321	6.677	−94.198	−81.366	−68.114	7.116
	600.00	38.710	50.548	33.202	−68.590	10.408	−98.919	−82.248	−65.379	5.692
	700.00	41.514	56.726	36.128	−64.579	14.419	−104.287	−83.024	−62.504	4.664
	800.00	44.317	62.452	39.064	−60.288	18.710	−110.249	−83.649	−59.528	3.887
	900.00	47.120	67.834	41.965	−55.716	23.282	−116.766	−84.092	−56.485	3.278
	1000.00	49.923	72.944	44.809	−50.864	28.134	−123.807	−84.334	−53.402	2.789
	1100.00	52.727	77.833	47.591	−45.731	33.267	−131.348	−84.364	−50.306	2.389

References

Phase	H / S	C_p	Remarks
SOL	Nb1/Tk1	Tk1,e	cubic

BS[g] BORON MONOSULFIDE (GAS) 42.877

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	30.091	216.171	216.171	243.090	0.000	178.639	243.090	189.934	−33.276
	300.00	30.095	216.357	216.172	243.146	0.056	178.238	243.083	189.604	−33.013
	400.00	31.307	225.154	217.363	246.207	3.117	156.145	240.197	171.955	−22.455
	500.00	32.700	232.296	219.657	249.410	6.320	133.262	237.768	155.149	−16.208
	600.00	33.754	238.356	222.281	252.735	9.645	109.721	235.537	138.842	−12.087
	700.00	34.523	243.620	224.962	256.151	13.061	85.617	233.488	122.888	−9.170
	800.00	35.095	248.269	227.590	259.633	16.543	61.018	231.327	107.233	−7.002
	900.00	35.532	252.429	230.123	263.165	20.075	35.979	176.271	93.010	−5.398
	1000.00	35.876	256.191	232.545	266.736	23.646	10.545	175.544	83.797	−4.377
	1100.00	36.154	259.624	234.853	270.338	27.248	−15.248	174.774	74.660	−3.545
	1200.00	36.385	262.780	237.050	273.966	30.876	−41.370	173.964	65.594	−2.855
	1300.00	36.581	265.700	239.143	277.614	34.524	−67.796	173.117	56.597	−2.274
	1400.00	36.751	268.417	241.138	281.281	38.191	−94.503	172.235	47.667	−1.778
	1500.00	36.900	270.958	243.042	284.964	41.874	−121.473	171.320	38.801	−1.351
	1600.00	37.034	273.344	244.862	288.660	45.570	−148.690	170.372	29.997	−0.979
	1700.00	37.155	275.593	246.605	292.370	49.280	−176.138	169.393	21.254	−0.653
	1800.00	37.267	277.720	248.275	296.091	53.001	−203.804	168.383	12.568	−0.365
	1900.00	37.370	279.737	249.878	299.823	56.733	−231.678	167.343	3.940	−0.108
	2000.00	37.467	281.657	251.419	303.565	60.475	−259.748	166.273	−4.632	0.121

References

Phase	H / S	C_p
GAS	Ja1	Ja1

B2S3 DIBORON TRISULFIDE 117.820

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	117.117	92.048	92.048	−252.295	0.000	−279.739	−252.295	−247.590	43.377
	300.00	117.236	92.773	92.050	−252.078	0.217	−279.910	−252.247	−247.561	43.104
	400.00	123.637	127.376	96.725	−240.035	12.260	−290.985	−256.676	−246.087	32.136
	500.00	130.039	155.653	105.764	−227.351	24.944	−305.177	−259.160	−243.221	25.409
	600.00	136.440	179.927	116.147	−214.027	38.268	−321.983	−260.525	−239.876	20.883
	700.00	142.842	201.440	126.823	−200.063	52.232	−341.071	−260.800	−236.405	17.641
	800.00	149.243	220.932	137.387	−185.458	66.837	−362.204	−260.842	−232.917	15.208
	836.00	151.548	227.552	141.127	−180.044	72.251	−370.278	−260.897	−231.660	14.474
			57.555		48.116					
LIQ	836.00	151.670	285.107	141.127	−131.928	120.367	−370.278	−212.781	−231.660	14.474
	900.00	151.670	296.295	151.769	−122.221	130.074	−388.887	−370.988	−229.657	13.329
	1000.00	151.670	312.275	167.034	−107.054	145.241	−419.329	−366.251	−214.209	11.189
	1100.00	151.670	326.731	180.906	−91.887	160.408	−451.291	−361.671	−199.228	9.461

References

Phase	H / S	C_p
SOL	Mi1	Mi1
LIQ	Mi1	Mi1

137.327 BARIUM **Ba**

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	28.087	62.417	62.417	0.000	0.000	–18.610	0.000	0.000	0.000
	300.00	28.088	62.591	62.417	0.052	0.052	–18.725	0.000	0.000	0.000
	400.00	33.041	71.150	63.552	3.039	3.039	–25.421	0.000	0.000	0.000
	500.00	43.681	79.598	65.908	6.845	6.845	–32.954	0.000	0.000	0.000
	600.00	35.920	88.388	68.935	11.672	11.672	–41.361	0.000	0.000	0.000
	700.00	41.118	94.261	72.134	15.489	15.489	–50.493	0.000	0.000	0.000
	800.00	42.166	99.886	75.258	19.703	19.703	–60.206	0.000	0.000	0.000
	900.00	40.367	104.708	78.269	23.795	23.795	–70.442	0.000	0.000	0.000
	1000.00	40.902	108.992	81.131	27.862	27.862	–81.131	0.000	0.000	0.000
	1002.00	40.894	109.074	81.186	27.944	27.944	–81.349	0.000	0.000	0.000
			7.734		7.749					
LIQ	1002.00	43.347	116.808	81.186	35.693	35.693	–81.349	0.000	0.000	0.000
	1100.00	41.933	120.783	84.541	39.866	39.866	–92.995	0.000	0.000	0.000
	1200.00	41.032	124.389	87.714	44.011	44.011	–105.256	0.000	0.000	0.000
	1300.00	40.520	127.651	90.662	48.086	48.086	–117.861	0.000	0.000	0.000
	1400.00	40.585	130.659	93.413	52.144	52.144	–130.778	0.000	0.000	0.000
	1500.00	40.585	133.459	95.991	56.203	56.203	–143.986	0.000	0.000	0.000
	1600.00	40.585	136.078	98.415	60.261	60.261	–157.464	0.000	0.000	0.000
	1700.00	40.585	138.539	100.704	64.320	64.320	–171.196	0.000	0.000	0.000
	1800.00	40.585	140.858	102.871	68.378	68.378	–185.167	0.000	0.000	0.000
	1900.00	40.585	143.053	104.928	72.437	72.437	–199.364	0.000	0.000	0.000
	2000.00	40.585	145.135	106.887	76.495	76.495	–213.774	0.000	0.000	0.000
	2100.00	40.585	147.115	108.756	80.553	80.553	–228.387	0.000	0.000	0.000
	2167.00	40.585	148.389	109.962	83.273	83.273	–238.287	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks	
SOL	Hu1	Hu1		TPT= 582. (lamda trans.)
LIQ	Hu1	Hu1	Hu1	BPT= 2167., L= 141.5 kJ

Ba[g] BARIUM (GAS) 137.327

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	20.786	170.243	170.243	182.004	0.000	131.246	182.004	149.856	−26.254
	300.00	20.786	170.372	170.244	182.042	0.038	130.931	181.990	149.656	−26.057
	400.00	20.786	176.352	171.059	184.121	2.117	113.580	181.082	139.001	−18.152
	500.00	20.786	180.990	172.599	186.200	4.196	95.705	179.355	128.659	−13.441
	600.00	20.786	184.780	174.323	188.278	6.274	77.410	176.606	118.771	−10.340
	700.00	20.786	187.984	176.051	190.357	8.353	58.768	174.868	109.262	−8.153
	800.00	20.786	190.760	177.720	192.436	10.432	39.828	172.732	100.034	−6.532
	900.00	20.782	193.208	179.308	194.514	12.510	20.627	170.719	91.069	−5.286
	1000.00	20.826	195.399	180.809	196.594	14.590	1.195	168.732	82.325	−4.300
	1100.00	20.898	197.387	182.227	198.680	16.676	−18.446	158.814	74.549	−3.540
	1200.00	21.018	199.210	183.568	200.775	18.771	−38.277	156.765	66.979	−2.916
	1300.00	21.242	200.901	184.837	202.887	20.883	−58.284	154.802	59.577	−2.394
	1400.00	21.623	202.488	186.041	205.029	23.025	−78.454	152.885	52.325	−1.952
	1500.00	22.200	203.998	187.188	207.218	25.214	−98.779	151.016	45.207	−1.574
	1600.00	23.001	205.455	188.285	209.476	27.472	−119.252	149.215	38.212	−1.248
	1700.00	24.040	206.880	189.337	211.827	29.823	−139.869	147.507	31.328	−0.963
	1800.00	25.320	208.289	190.351	214.293	32.289	−160.627	145.915	24.540	−0.712
	1900.00	26.838	209.697	191.332	216.899	34.895	−181.526	144.462	17.837	−0.490
	2000.00	28.580	211.117	192.285	219.668	37.664	−202.567	143.173	11.207	−0.293
	2100.00	30.531	212.558	193.216	222.622	40.618	−223.750	142.068	4.637	−0.115
	2200.00	32.670	214.027	194.129	225.780	43.776	−245.080	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1

689.819

BARIUM ARSENATE **Ba3(AsO4)2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	257.212	309.616	309.616	−3421.675	0.000	−3513.987	−3421.675	−3192.208	559.262
	300.00	257.783	311.209	309.621	−3421.199	0.476	−3514.561	−3421.663	−3190.784	555.565
	400.00	279.744	388.717	320.040	−3394.204	27.471	−3549.691	−3420.527	−3113.989	406.645
	500.00	292.813	452.639	340.357	−3365.534	56.141	−3591.853	−3420.643	−3037.391	317.314
	600.00	302.381	506.906	363.706	−3335.755	85.920	−3639.898	−3423.229	−2960.509	257.735
	700.00	310.297	554.127	387.608	−3305.111	116.564	−3693.001	−3422.411	−2883.473	215.167
	800.00	317.332	596.028	411.090	−3273.724	147.951	−3750.547	−3422.478	−2806.477	183.244
	900.00	323.854	633.785	433.771	−3241.662	180.013	−3812.068	−3421.877	−2729.504	158.416
	1000.00	330.059	668.230	455.519	−3208.964	212.711	−3877.194	−3420.848	−2652.628	138.559
	1100.00	336.056	699.970	476.318	−3175.657	246.018	−3945.624	−3443.266	−2573.566	122.208
	1200.00	341.911	729.463	496.199	−3141.758	279.917	−4017.113	−3441.897	−2494.561	108.585
	1300.00	347.667	757.058	515.215	−3107.278	314.397	−4091.454	−3440.448	−2415.676	97.063
	1400.00	353.350	783.032	533.426	−3072.227	349.448	−4168.471	−3439.582	−2336.886	87.190
	1500.00	358.980	807.602	550.892	−3036.610	385.065	−4248.014	−3632.939	−2245.265	78.187
	1600.00	364.569	830.949	567.672	−3000.432	421.243	−4329.951	−3627.340	−2152.933	70.286
	1700.00	370.126	853.218	583.819	−2963.697	457.978	−4414.167	−3621.285	−2060.966	63.326
	1800.00	375.659	874.530	599.382	−2926.408	495.267	−4500.562	−3614.775	−1969.368	57.150
	1878.00	379.961	890.557	611.144	−2896.938	524.737	−4569.404	−3609.380	−1898.181	52.796

References

Phase	H / S	C_p
SOL	G1	G1

BaBr2 BARIUM BROMIDE 297.135

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	77.014	148.532	148.532	−757.722	0.000	−802.007	−757.722	−738.016	129.297
	300.00	77.054	149.009	148.533	−757.579	0.143	−802.282	−757.771	−737.893	128.479
	400.00	79.216	171.472	151.582	−749.766	7.956	−818.355	−787.427	−725.117	94.691
	500.00	81.378	189.380	157.409	−741.736	15.986	−836.426	−786.895	−709.620	74.133
	600.00	83.541	204.409	164.022	−733.490	24.232	−856.135	−787.195	−694.139	60.430
	700.00	85.703	217.449	170.743	−725.028	32.694	−877.242	−786.285	−678.707	50.646
	800.00	87.865	229.034	177.319	−716.350	41.372	−899.577	−785.568	−663.387	43.315
	900.00	90.028	239.508	183.656	−707.455	50.267	−923.012	−784.523	−648.173	37.619
	1000.00	92.190	249.105	189.727	−698.344	59.378	−947.449	−783.245	−633.090	33.069
	1100.00	94.352	257.993	195.534	−689.017	68.705	−972.810	−789.695	−617.377	29.317
	1130.00	95.001	260.541	197.226	−686.177	71.545	−980.588	−789.241	−612.683	28.321
			28.288		31.966					
LIQ	1130.00	104.851	288.829	197.226	−654.211	103.511	−980.588	−789.241	−612.683	28.321
	1200.00	104.851	295.131	202.755	−646.871	110.851	−1001.029	−755.473	−603.781	26.282
	1300.00	104.851	303.524	210.188	−636.386	121.336	−1030.967	−752.849	−591.246	23.757
	1400.00	104.851	311.294	217.136	−625.901	131.821	−1061.713	−750.213	−578.914	21.600
	1500.00	104.851	318.528	223.657	−615.416	142.306	−1093.208	−747.584	−566.770	19.737
	1600.00	104.851	325.295	229.800	−604.931	152.791	−1125.403	−744.960	−554.801	18.112
	1700.00	104.851	331.651	235.606	−594.446	163.276	−1158.253	−742.341	−542.996	16.684
	1800.00	104.851	337.644	241.110	−583.961	173.761	−1191.721	−739.727	−531.345	15.419
	1900.00	104.851	343.313	246.342	−573.476	184.246	−1225.771	−737.119	−519.840	14.291
	2000.00	104.851	348.692	251.326	−562.990	194.732	−1260.374	−734.515	−508.472	13.280
	2100.00	104.851	353.807	256.085	−552.505	205.217	−1295.501	−731.916	−497.233	12.368
	2200.00	104.851	358.685	260.639	−542.020	215.702	−1331.127	−870.491	−484.233	11.497
	2300.00	104.851	363.346	265.004	−531.535	226.187	−1367.230	−867.225	−466.750	10.600
	2301.00	104.851	363.391	265.046	−531.430	226.292	−1367.594	−867.193	−466.576	10.592

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja1	BPT= 2301., L= 223.0 kJ

297.135

BARIUM BROMIDE (GAS) **BaBr2**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	57.024	341.942	341.942	−424.676	0.000	−526.626	−424.676	−462.635	81.052
	300.00	57.038	342.295	341.943	−424.570	0.106	−527.259	−424.762	−462.870	80.593
	400.00	57.543	358.783	344.188	−418.838	5.838	−562.351	−456.499	−469.114	61.260
	500.00	57.776	371.652	348.441	−413.071	11.605	−598.896	−458.230	−472.090	49.319
	600.00	57.904	382.198	353.215	−407.286	17.390	−636.605	−460.991	−474.609	41.318
	700.00	57.981	391.130	358.009	−401.492	23.184	−675.282	−462.749	−476.747	35.575
	800.00	58.031	398.876	362.644	−395.691	28.985	−714.791	−464.909	−478.601	31.249
	900.00	58.065	405.713	367.057	−389.886	34.790	−755.027	−466.954	−480.188	27.869
	1000.00	58.090	411.832	371.234	−384.078	40.598	−795.910	−468.979	−481.550	25.154
	1100.00	58.109	417.369	375.180	−378.268	46.408	−837.374	−478.946	−481.941	22.885
	1200.00	58.123	422.426	378.910	−372.457	52.219	−879.368	−481.058	−482.120	20.986
	1300.00	58.134	427.079	382.439	−366.644	58.032	−921.846	−483.106	−482.125	19.372
	1400.00	58.143	431.387	385.783	−360.830	63.846	−964.772	−485.142	−481.973	17.983
	1500.00	58.150	435.399	388.959	−355.015	69.661	−1008.114	−487.183	−481.676	16.773
	1600.00	58.156	439.152	391.980	−349.200	75.476	−1051.843	−489.229	−481.242	15.711
	1700.00	58.162	442.678	394.859	−343.384	81.292	−1095.937	−491.279	−480.680	14.769
	1800.00	58.166	446.003	397.609	−337.567	87.109	−1140.372	−493.334	−479.997	13.929
	1900.00	58.170	449.148	400.240	−331.751	92.925	−1185.131	−495.394	−479.200	13.174
	2000.00	58.173	452.131	402.760	−325.934	98.742	−1230.196	−497.458	−478.294	12.492
	2100.00	58.176	454.970	405.179	−320.116	104.560	−1275.553	−499.527	−477.285	11.872
	2200.00	58.179	457.676	407.505	−314.298	110.378	−1321.186	−642.769	−474.292	11.261
	2300.00	58.181	460.262	409.743	−308.480	116.196	−1367.084	−644.170	−466.603	10.597
	2400.00	58.183	462.739	411.900	−302.662	122.014	−1413.235	−645.812	−458.849	9.987
	2500.00	58.185	465.114	413.981	−296.844	127.832	−1459.628	−647.709	−451.021	9.424

References

Phase	H / S	C_p
GAS	Ja1	Ja1

BaC2 BARIUM DICARBIDE 161.349

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	63.888	87.864	87.864	−74.977	0.000	−101.174	−74.977	−79.141	13.865
	300.00	64.029	88.260	87.865	−74.859	0.118	−101.337	−74.942	−79.167	13.784
	400.00	69.104	107.472	90.450	−68.168	6.809	−111.157	−73.313	−80.839	10.556
	500.00	71.655	123.193	95.476	−61.118	13.859	−122.715	−72.731	−82.816	8.652
	600.00	73.213	136.404	101.226	−53.870	21.107	−135.712	−73.470	−84.774	7.380
	700.00	74.302	147.776	107.082	−46.491	28.486	−149.935	−73.465	−86.670	6.467
	800.00	75.141	157.755	112.805	−39.017	35.960	−165.221	−74.053	−88.519	5.780
	900.00	75.834	166.646	118.303	−31.468	43.509	−181.449	−74.661	−90.291	5.240
	1000.00	76.437	174.668	123.545	−23.854	51.123	−198.522	−75.352	−91.992	4.805
	1100.00	76.982	181.979	128.529	−16.182	58.795	−216.359	−84.063	−92.851	4.409
	1200.00	77.486	188.699	133.267	−8.459	66.518	−234.898	−84.975	−93.609	4.075
	1300.00	77.962	194.920	137.774	−0.686	74.291	−254.083	−85.861	−94.292	3.789
	1400.00	78.417	200.715	142.065	7.133	82.110	−273.868	−86.758	−94.908	3.541
	1500.00	78.857	206.140	146.157	14.997	89.974	−294.213	−87.672	−95.458	3.324

References

Phase	H / S	C_p
SOL	Nb1/Ku1	e

197.336

BARIUM CARBONATE

BaCO3

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[	J / (K mol)	]	[		kJ / mol		]	[−]
SOL−A	298.15	85.353	112.131	112.131	−1216.289	0.000	−1249.721	−1216.289	−1137.653	199.312
	300.00	85.687	112.660	112.133	−1216.131	0.158	−1249.929	−1216.280	−1137.165	197.998
	400.00	98.409	139.246	115.672	−1206.859	9.430	−1262.558	−1215.489	−1110.904	145.069
	500.00	106.577	162.125	122.729	−1196.591	19.698	−1277.654	−1214.947	−1084.834	113.332
	600.00	113.341	182.166	130.999	−1185.589	30.700	−1294.888	−1215.091	−1058.799	92.177
	700.00	119.558	200.109	139.612	−1173.941	42.348	−1314.017	−1213.920	−1032.847	77.072
	800.00	125.526	216.465	148.210	−1161.685	54.604	−1334.857	−1212.808	−1007.052	65.754
	900.00	131.369	231.588	156.645	−1148.840	67.449	−1357.269	−1211.195	−981.423	56.960
	1000.00	137.143	245.729	164.853	−1135.414	80.875	−1381.142	−1209.148	−956.000	49.936
	1079.00	141.675	256.327	171.166	−1124.400	91.889	−1400.977	−1215.133	−935.471	45.286
			16.274		17.560					
SOL−B	1079.00	154.808	272.601	171.166	−1106.840	109.449	−1400.977	−1197.573	−935.471	45.286
	1100.00	154.808	275.585	173.131	−1103.589	112.700	−1406.733	−1196.781	−930.377	44.180
	1200.00	154.808	289.055	182.238	−1088.108	128.181	−1434.974	−1193.013	−906.325	39.451
	1241.00	154.808	294.256	185.853	−1081.761	134.528	−1446.933	−1191.476	−896.556	37.737
			2.522		3.130					
SOL−C	1241.00	158.992	296.778	185.853	−1078.631	137.658	−1446.933	−1188.346	−896.556	37.737
	1300.00	158.992	304.163	191.056	−1069.251	147.038	−1464.662	−1185.897	−882.741	35.469
	1400.00	158.992	315.945	199.561	−1053.351	162.938	−1495.675	−1181.805	−859.576	32.071

References

Phase	H / S	C_p
SOL−A	Nb1	Pa3
SOL−B	Pa3	Ku1
SOL−C	Pa3	Pa3

BaCl[g] BARIUM MONOCHLORIDE (GAS) 172.780

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	36.434	258.639	258.639	−142.256	0.000	−219.369	−142.256	−167.498	29.345
	300.00	36.449	258.864	258.639	−142.189	0.067	−219.848	−142.272	−167.655	29.191
	400.00	36.979	269.432	260.077	−138.514	3.742	−246.287	−143.318	−175.973	22.980
	500.00	37.257	277.716	262.806	−134.801	7.455	−273.659	−145.196	−183.941	19.216
	600.00	37.435	284.526	265.875	−131.066	11.190	−301.781	−148.106	−191.423	16.665
	700.00	37.567	290.307	268.963	−127.315	14.941	−330.530	−150.011	−198.500	14.812
	800.00	37.673	295.330	271.952	−123.553	18.703	−359.817	−152.315	−205.271	13.403
	900.00	37.765	299.773	274.801	−119.781	22.475	−389.577	−154.498	−211.758	12.290
	1000.00	37.848	303.756	277.501	−116.001	26.255	−419.757	−156.655	−218.005	11.387
	1100.00	37.913	307.367	280.054	−112.212	30.044	−450.316	−166.748	−223.268	10.602
	1200.00	37.977	310.668	282.470	−108.418	33.838	−481.220	−168.980	−228.307	9.938
	1300.00	38.048	313.711	284.757	−104.617	37.639	−512.441	−171.140	−233.163	9.369
	1400.00	38.131	316.533	286.928	−100.808	41.448	−543.955	−173.281	−237.853	8.874
	1500.00	38.232	319.167	288.990	−96.990	45.266	−575.741	−175.415	−242.391	8.441
	1600.00	38.352	321.639	290.954	−93.161	49.095	−607.783	−177.543	−246.787	8.057
	1700.00	38.494	323.968	292.828	−89.319	52.937	−640.064	−179.661	−251.049	7.714
	1800.00	38.658	326.173	294.620	−85.461	56.795	−672.572	−181.767	−255.188	7.405
	1900.00	38.846	328.268	296.336	−81.586	60.670	−705.295	−183.859	−259.210	7.126
	2000.00	39.058	330.265	297.983	−77.691	64.565	−738.222	−185.935	−263.122	6.872
	2100.00	39.296	332.177	299.566	−73.774	68.482	−771.345	−187.992	−266.930	6.640
	2200.00	39.559	334.011	301.090	−69.831	72.425	−804.655	−331.197	−268.756	6.381
	2300.00	39.848	335.775	302.560	−65.861	76.395	−838.145	−332.531	−265.889	6.039
	2400.00	40.163	337.478	303.980	−61.861	80.395	−871.808	−334.078	−262.959	5.723
	2500.00	40.504	339.124	305.353	−57.828	84.428	−905.639	−335.845	−259.960	5.432
	2600.00	40.872	340.720	306.683	−53.759	88.497	−939.631	−337.839	−256.886	5.161
	2700.00	41.267	342.270	307.972	−49.652	92.604	−973.781	−340.065	−253.731	4.909
	2800.00	41.689	343.778	309.224	−45.505	96.751	−1008.084	−342.522	−250.489	4.673
	2900.00	42.138	345.249	310.441	−41.314	100.942	−1042.535	−345.208	−247.155	4.452
	3000.00	42.614	346.685	311.625	−37.076	105.180	−1077.132	−348.114	−243.725	4.244

References

Phase	H / S	C_p
GAS	Ja1	Ja1

208.232 BARIUM CHLORIDE **BaCl2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−1	298.15	75.142	123.667	123.667	−858.557	0.000	−895.428	−858.557	−810.296	141.961
	300.00	75.196	124.131	123.668	−858.418	0.139	−895.657	−858.533	−809.997	141.033
	400.00	77.317	146.083	126.647	−850.782	7.775	−909.216	−857.351	−794.008	103.687
	500.00	78.871	163.506	132.335	−842.972	15.585	−924.725	−856.917	−778.243	81.302
	600.00	80.419	178.021	138.773	−835.008	23.549	−941.821	−857.416	−762.466	66.379
	700.00	82.223	190.542	145.294	−826.883	31.674	−960.263	−856.785	−746.697	55.719
	800.00	84.324	201.658	151.657	−818.556	40.001	−979.883	−856.377	−730.996	47.729
	900.00	86.592	211.718	157.780	−810.013	48.544	−1000.559	−855.652	−715.363	41.519
	1000.00	89.492	220.983	163.643	−801.216	57.341	−1022.200	−854.663	−699.827	36.555
	1100.00	93.524	229.691	169.255	−792.077	66.480	−1044.737	−861.282	−683.636	32.463
	1198.00	98.974	237.890	174.536	−782.658	75.899	−1067.651	−859.614	−667.877	29.120
			14.109		16.903					
SOL−2	1198.00	123.846	252.000	174.536	−765.755	92.802	−1067.651	−859.614	−667.877	29.120
	1200.00	123.846	252.206	174.665	−765.507	93.050	−1068.155	−842.621	−667.585	29.059
	1235.00	123.846	255.767	176.913	−761.173	97.384	−1077.045	−841.038	−662.503	28.021
			12.948		15.991					
LIQ	1235.00	108.784	268.715	176.913	−745.182	113.375	−1077.045	−841.038	−662.503	28.021
	1300.00	108.784	274.295	181.644	−738.111	120.446	−1094.694	−823.072	−653.999	26.278
	1400.00	108.784	282.357	188.553	−727.232	131.325	−1122.532	−820.033	−641.107	23.920
	1500.00	108.784	289.862	195.060	−716.354	142.203	−1151.147	−817.002	−628.433	21.884
	1600.00	108.784	296.883	201.207	−705.475	153.082	−1180.488	−813.978	−615.960	20.109
	1700.00	108.784	303.478	207.031	−694.597	163.960	−1210.509	−810.961	−603.676	18.549
	1800.00	108.784	309.696	212.563	−683.719	174.838	−1241.171	−807.952	−591.570	17.167
	1900.00	108.784	315.577	217.832	−672.840	185.717	−1272.437	−804.949	−579.630	15.935
	2000.00	108.784	321.157	222.860	−661.962	196.595	−1304.276	−801.954	−567.849	14.831
	2100.00	108.784	326.465	227.668	−651.083	207.474	−1336.659	−798.967	−556.217	13.835
	2200.00	108.784	331.525	232.274	−640.205	218.352	−1369.561	−937.155	−542.842	12.889
	2299.40	108.784	336.333	236.670	−629.392	229.165	−1402.755	−933.527	−525.108	11.929

References

Phase	H / S	C_p	Remarks	
SOL−1	Ja1	Ja1		
SOL−2	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja1	BPT= 2299.4, L= 246.4 kJ

BaCl2[g] BARIUM CHLORIDE (GAS) 208.232

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	56.158	325.750	325.750	−498.733	0.000	−595.855	−498.733	−510.724	89.477
	300.00	56.182	326.098	325.751	−498.629	0.104	−596.458	−498.744	−510.798	88.938
	400.00	57.030	342.393	327.967	−492.963	5.770	−629.920	−499.532	−514.712	67.215
	500.00	57.439	355.167	332.176	−487.237	11.496	−664.821	−501.183	−518.339	54.151
	600.00	57.666	365.662	336.908	−481.481	17.252	−700.878	−503.889	−521.523	45.403
	700.00	57.806	374.562	341.668	−475.707	23.026	−737.900	−505.609	−524.334	39.126
	800.00	57.897	382.287	346.273	−469.921	28.812	−775.751	−507.743	−526.865	34.401
	900.00	57.960	389.111	350.661	−464.128	34.605	−814.328	−509.767	−529.132	30.710
	1000.00	58.006	395.220	354.817	−458.330	40.403	−853.550	−511.777	−531.177	27.746
	1100.00	58.039	400.750	358.745	−452.528	46.205	−893.353	−521.733	−532.251	25.275
	1200.00	58.065	405.801	362.459	−446.722	52.011	−933.684	−523.836	−533.114	23.206
	1300.00	58.085	410.450	365.974	−440.915	57.818	−974.499	−525.876	−533.804	21.449
	1400.00	58.101	414.755	369.307	−435.105	63.628	−1015.762	−527.906	−534.338	19.936
	1500.00	58.114	418.764	372.472	−429.295	69.438	−1057.441	−529.943	−534.726	18.621
	1600.00	58.125	422.515	375.483	−423.483	75.250	−1099.507	−531.985	−534.979	17.465
	1700.00	58.133	426.039	378.355	−417.670	81.063	−1141.936	−534.034	−535.103	16.442
	1800.00	58.141	429.362	381.097	−411.856	86.877	−1184.708	−536.089	−535.107	15.528
	1900.00	58.147	432.506	383.721	−406.042	92.691	−1227.802	−538.151	−534.996	14.708
	2000.00	58.152	435.488	386.235	−400.227	98.506	−1271.203	−540.219	−534.776	13.967
	2100.00	58.156	438.326	388.649	−394.411	104.322	−1314.895	−542.295	−534.453	13.294
	2200.00	58.160	441.031	390.969	−388.595	110.138	−1358.864	−685.546	−532.145	12.635
	2300.00	58.164	443.617	393.202	−382.779	115.954	−1403.098	−686.959	−525.142	11.926
	2400.00	58.166	446.092	395.355	−376.963	121.770	−1447.584	−688.617	−518.072	11.276
	2500.00	58.169	448.467	397.432	−371.146	127.587	−1492.313	−690.533	−510.927	10.675
	2600.00	58.171	450.748	399.439	−365.329	133.404	−1537.274	−692.717	−503.701	10.119
	2700.00	58.173	452.944	401.380	−359.512	139.221	−1582.459	−695.174	−496.385	9.603
	2800.00	58.175	455.059	403.260	−353.694	145.039	−1627.860	−697.908	−488.974	9.122
	2900.00	58.177	457.101	405.081	−347.877	150.856	−1673.469	−700.919	−481.459	8.672
	3000.00	58.178	459.073	406.848	−342.059	156.674	−1719.278	−704.202	−473.837	8.250

References

Phase	H / S	C_p
GAS	Ja1	Ja1

253.321 BARIUM CHROMATE **BaCrO4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	120.205	158.615	158.615	−1445.990	0.000	−1493.281	−1445.990	−1345.294	235.690
	300.00	120.543	159.360	158.618	−1445.767	0.223	−1493.575	−1445.971	−1344.670	234.128
	400.00	133.315	195.997	163.526	−1433.002	12.988	−1511.400	−1444.564	−1311.102	171.212
	500.00	140.624	226.589	173.166	−1419.279	26.711	−1532.573	−1443.367	−1277.890	133.500
	600.00	145.784	252.705	184.299	−1404.947	41.043	−1556.570	−1442.932	−1244.839	108.373
	700.00	149.928	275.498	195.734	−1390.155	55.835	−1583.004	−1441.341	−1211.955	90.437
	800.00	153.531	295.758	206.994	−1374.979	71.011	−1611.585	−1440.029	−1179.275	76.999
	900.00	156.819	314.033	217.888	−1359.459	86.531	−1642.089	−1438.475	−1146.771	66.557
	1000.00	159.912	330.717	228.349	−1343.622	102.368	−1674.339	−1436.774	−1114.450	58.213

References

Phase	H / S	C_p
SOL	Nb1	e

BaF[g] BARIUM MONOFLUORIDE (GAS) 156.325

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	34.747	246.212	246.212	–322.168	0.000	–395.576	–322.168	–346.735	60.747
	300.00	34.776	246.427	246.213	–322.104	0.064	–396.032	–322.185	–346.887	60.398
	400.00	35.871	256.599	247.592	–318.565	3.603	–421.205	–323.240	–354.975	46.355
	500.00	36.467	264.674	250.229	–314.946	7.222	–447.282	–325.108	–362.715	37.893
	600.00	36.833	271.357	253.209	–311.279	10.889	–474.094	–328.005	–369.971	32.209
	700.00	37.081	277.055	256.219	–307.583	14.585	–501.521	–329.901	–376.824	28.119
	800.00	37.262	282.018	259.140	–303.865	18.303	–529.480	–332.200	–383.371	25.032
	900.00	37.403	286.416	261.931	–300.132	22.036	–557.906	–334.382	–389.635	22.614
	1000.00	37.518	290.363	264.580	–296.386	25.782	–586.748	–336.544	–395.659	20.667
	1100.00	37.616	293.943	267.089	–292.629	29.539	–615.966	–346.644	–400.697	19.028
	1200.00	37.701	297.220	269.466	–288.863	33.305	–645.527	–348.887	–405.512	17.651
	1300.00	37.778	300.241	271.718	–285.089	37.079	–675.402	–351.061	–410.142	16.480
	1400.00	37.849	303.043	273.857	–281.308	40.860	–705.568	–353.220	–414.606	15.469
	1500.00	37.915	305.657	275.891	–277.519	44.649	–736.004	–355.378	–418.915	14.588
	1600.00	37.978	308.106	277.828	–273.725	48.443	–766.694	–357.537	–423.080	13.812
	1700.00	38.080	310.412	279.678	–269.921	52.247	–797.621	–359.693	–427.111	13.124
	1800.00	38.177	312.591	281.446	–266.108	56.060	–828.772	–361.845	–431.015	12.508
	1900.00	38.289	314.658	283.141	–262.285	59.883	–860.135	–363.991	–434.799	11.953
	2000.00	38.421	316.625	284.766	–258.450	63.718	–891.700	–366.131	–438.470	11.452
	2100.00	38.571	318.503	286.328	–254.600	67.568	–923.457	–368.261	–442.035	10.995
	2200.00	38.743	320.302	287.832	–250.735	71.433	–955.398	–511.547	–443.612	10.533
	2300.00	38.936	322.028	289.281	–246.851	75.317	–987.515	–512.974	–440.493	10.004
	2400.00	39.150	323.689	290.681	–242.947	79.221	–1019.801	–514.622	–437.307	9.518
	2500.00	39.387	325.292	292.033	–239.020	83.148	–1052.251	–516.500	–434.048	9.069
	2600.00	39.647	326.842	293.342	–235.069	87.099	–1084.858	–518.617	–430.709	8.653
	2700.00	39.929	328.344	294.611	–231.090	91.078	–1117.618	–520.974	–427.284	8.266
	2800.00	40.234	329.801	295.842	–227.082	95.086	–1150.525	–523.574	–423.767	7.905
	2900.00	40.563	331.219	297.037	–223.042	99.126	–1183.577	–526.411	–420.153	7.568
	3000.00	40.915	332.600	298.200	–218.969	103.199	–1216.768	–529.481	–416.438	7.251

References

Phase	H / S	C_p
GAS	Ja1	Ja1

175.324 BARIUM FLUORIDE **BaF2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	72.221	96.399	96.399	−1208.758	0.000	−1237.499	−1208.758	−1158.427	202.952
	300.00	72.285	96.846	96.401	−1208.624	0.134	−1237.678	−1208.734	−1158.114	201.646
	400.00	75.942	118.158	99.281	−1201.207	7.551	−1248.471	−1207.518	−1141.432	149.056
	500.00	78.447	135.393	104.835	−1193.479	15.279	−1261.175	−1206.958	−1124.995	117.527
	600.00	80.335	149.865	111.166	−1185.538	23.220	−1275.457	−1207.318	−1108.573	96.510
	700.00	82.382	162.397	117.609	−1177.406	31.352	−1291.084	−1206.553	−1092.183	81.500
	800.00	84.935	173.551	123.916	−1169.050	39.708	−1307.891	−1206.017	−1075.879	70.248
	900.00	88.701	183.760	130.005	−1160.379	48.379	−1325.763	−1205.085	−1059.663	61.501
	1000.00	94.558	193.376	135.865	−1151.247	57.511	−1344.623	−1203.701	−1043.574	54.511
	1100.00	104.182	202.810	141.522	−1141.342	67.416	−1364.432	−1209.506	−1026.889	48.763
	1200.00	130.541	213.005	147.044	−1129.605	79.153	−1385.211	−1205.643	−1010.437	43.983
	1240.00	141.084	217.457	149.243	−1124.173	84.585	−1393.820	−1203.343	−1003.967	42.292
			0.000		0.000					
SOL−B	1240.00	151.837	217.457	149.243	−1124.173	84.585	−1393.820	−1203.343	−1003.967	42.292
	1300.00	137.654	224.299	152.553	−1115.488	93.270	−1407.077	−1199.347	−994.419	39.956
	1400.00	114.014	233.635	158.026	−1102.905	105.853	−1429.994	−1194.585	−978.849	36.521
	1480.00	95.102	239.451	162.276	−1094.540	114.218	−1448.927	−1192.488	−966.587	34.114
			1.807		2.674					
SOL−C	1480.00	107.654	241.257	162.276	−1091.866	116.892	−1448.927	−1189.814	−966.587	34.114
	1500.00	107.654	242.702	163.339	−1089.713	119.045	−1453.767	−1189.229	−963.574	33.555
	1600.00	107.654	249.650	168.519	−1078.948	129.810	−1478.388	−1186.312	−948.626	30.969
	1641.00	107.654	252.374	170.580	−1074.534	134.224	−1488.680	−1185.119	−942.550	30.002
			14.235		23.359					
LIQ	1641.00	99.826	266.609	170.580	−1051.175	157.583	−1488.680	−1161.760	−942.550	30.002
	1700.00	99.826	270.135	173.974	−1045.285	163.473	−1504.514	−1160.509	−934.691	28.720
	1800.00	99.826	275.841	179.477	−1035.303	173.455	−1531.816	−1158.398	−921.469	26.740
	1900.00	99.826	281.238	184.692	−1025.320	183.438	−1559.672	−1156.296	−908.363	24.973
	2000.00	99.826	286.358	189.648	−1015.337	193.421	−1588.054	−1154.205	−895.368	23.385
	2100.00	99.826	291.229	194.370	−1005.355	203.403	−1616.936	−1152.122	−882.478	21.950
	2200.00	99.826	295.873	198.879	−995.372	213.386	−1646.292	−1291.217	−867.801	20.604
	2300.00	99.826	300.310	203.194	−985.389	223.369	−1676.103	−1288.474	−848.617	19.273
	2400.00	99.826	304.559	207.329	−975.407	233.351	−1706.348	−1285.977	−829.547	18.055
	2500.00	99.826	308.634	211.301	−965.424	243.334	−1737.009	−1283.738	−810.576	16.936
	2543.00	99.826	310.336	212.961	−961.132	247.626	−1750.317	−1282.856	−802.445	16.483

References

Phase	H / S	C_p	Remarks	
SOL−A	Ja1	Ja1		
SOL−B	Ja1	Ja1		
SOL−C	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja1	BPT= 2543., L= 285.4 kJ

BaF2[g] BARIUM FLUORIDE (GAS) 175.324

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	53.778	301.274	301.274	−803.746	0.000	−893.571	−803.746	−814.498	142.697
	300.00	53.824	301.607	301.275	−803.646	0.100	−894.128	−803.756	−814.565	141.828
	400.00	55.558	317.359	303.411	−798.167	5.579	−925.110	−804.477	−818.072	106.829
	500.00	56.444	329.861	307.494	−792.562	11.184	−957.493	−806.042	−821.313	85.802
	600.00	56.953	340.201	312.108	−786.890	16.856	−991.011	−808.670	−824.127	71.747
	700.00	57.271	349.006	316.766	−781.178	22.568	−1025.482	−810.325	−826.581	61.680
	800.00	57.483	356.668	321.285	−775.440	28.306	−1060.774	−812.406	−828.762	54.113
	900.00	57.631	363.448	325.601	−769.683	34.063	−1096.787	−814.390	−830.686	48.212
	1000.00	57.738	369.526	329.694	−763.915	39.831	−1133.440	−816.369	−832.392	43.480
	1100.00	57.818	375.033	333.570	−758.137	45.609	−1170.673	−826.302	−833.129	39.562
	1200.00	57.879	380.066	337.238	−752.352	51.394	−1208.431	−828.389	−833.657	36.288
	1300.00	57.927	384.701	340.713	−746.561	57.185	−1246.673	−830.420	−834.014	33.511
	1400.00	57.965	388.995	344.010	−740.767	62.979	−1285.360	−832.447	−834.214	31.125
	1500.00	57.996	392.995	347.144	−734.969	68.777	−1324.462	−834.484	−834.270	29.052
	1600.00	58.021	396.739	350.128	−729.168	74.578	−1363.951	−836.532	−834.188	27.233
	1700.00	58.041	400.257	352.974	−723.365	80.381	−1403.802	−838.589	−833.979	25.625
	1800.00	58.059	403.575	355.694	−717.560	86.186	−1443.995	−840.655	−833.648	24.192
	1900.00	58.073	406.715	358.298	−711.753	91.993	−1484.511	−842.729	−833.203	22.906
	2000.00	58.086	409.694	360.794	−705.945	97.801	−1525.333	−844.813	−832.647	21.747
	2100.00	58.096	412.528	363.190	−700.136	103.610	−1566.445	−846.904	−831.988	20.695
	2200.00	58.105	415.231	365.495	−694.326	109.420	−1607.834	−990.171	−829.343	19.691
	2300.00	58.113	417.814	367.714	−688.515	115.231	−1649.488	−991.600	−822.001	18.668
	2400.00	58.120	420.288	369.853	−682.703	121.043	−1691.394	−993.274	−814.592	17.729
	2500.00	58.126	422.660	371.918	−676.891	126.855	−1733.542	−995.205	−807.108	16.864
	2600.00	58.131	424.940	373.914	−671.078	132.668	−1775.922	−997.401	−799.542	16.063
	2700.00	58.135	427.134	375.845	−665.265	138.481	−1818.527	−999.870	−791.886	15.320
	2800.00	58.139	429.248	377.715	−659.451	144.295	−1861.347	−1002.613	−784.134	14.628
	2900.00	58.143	431.289	379.527	−653.637	150.109	−1904.374	−1005.629	−776.278	13.982
	3000.00	58.146	433.260	381.285	−647.823	155.923	−1947.602	−1008.915	−768.315	13.378

References

Phase	H / S	C_p
GAS	Ja1	Ja1

138.335

BARIUM MONOHYDRIDE (GAS) **BaH**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	30.236	219.008	219.008	203.535	0.000	138.238	203.535	176.328	−30.892
	300.00	30.251	219.195	219.009	203.591	0.056	137.832	203.512	176.160	−30.672
	400.00	31.649	228.075	220.210	206.681	3.146	115.451	202.162	167.235	−21.839
	500.00	33.031	235.292	222.526	209.918	6.383	92.272	200.132	158.719	−16.581
	600.00	34.090	241.412	225.177	213.276	9.741	68.429	197.199	150.708	−13.120
	700.00	34.898	246.730	227.884	216.727	13.192	44.016	195.364	143.097	−10.678
	800.00	35.537	251.434	230.540	220.250	16.715	19.103	193.196	135.778	−8.865
	900.00	36.066	255.651	233.099	223.831	20.296	−6.254	191.198	128.723	−7.471
	1000.00	36.527	259.475	235.549	227.461	23.926	−32.014	189.259	121.885	−6.367
	1100.00	36.949	262.976	237.885	231.135	27.600	−58.139	179.410	116.008	−5.509
	1200.00	37.356	266.209	240.113	234.851	31.316	−84.600	177.441	110.332	−4.803
	1300.00	37.768	269.215	242.237	238.607	35.072	−111.373	175.562	104.817	−4.212
	1400.00	38.200	272.030	244.265	242.405	38.870	−138.437	173.720	99.444	−3.710
	1500.00	38.666	274.681	246.206	246.248	42.713	−165.773	171.900	94.202	−3.280
	1600.00	39.179	277.192	248.064	250.140	46.605	−193.368	170.108	89.081	−2.908
	1700.00	39.751	279.584	249.849	254.086	50.551	−221.208	168.349	84.071	−2.583
	1800.00	40.394	281.874	251.565	258.092	54.557	−249.282	166.630	79.163	−2.297
	1900.00	41.117	284.077	253.218	262.167	58.632	−277.580	164.960	74.349	−2.044
	2000.00	41.932	286.207	254.815	266.319	62.784	−306.095	163.348	69.622	−1.818

References

Phase	H / S	C_p
GAS	Tk1	Pa3

BaH2 BARIUM HYDRIDE 139.343

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[	J / (K mol)	]	[		kJ / mol		]	
SOL–1	298.15	45.999	62.999	62.999	–190.079	0.000	–208.862	–190.079	–151.290	26.505
	300.00	46.051	63.283	62.999	–189.994	0.085	–208.979	–190.099	–151.049	26.300
	400.00	48.844	76.914	64.839	–185.249	4.830	–216.015	–191.248	–137.867	18.004
	500.00	51.637	88.113	68.405	–180.225	9.854	–224.282	–192.952	–124.341	12.990
	600.00	54.430	97.774	72.512	–174.922	15.157	–233.586	–195.405	–110.390	9.610
	700.00	57.223	106.374	76.746	–169.339	20.740	–243.801	–196.577	–96.132	7.173
	800.00	60.015	114.198	80.946	–163.477	26.602	–254.835	–197.882	–81.692	5.334
	871.00	61.998	119.384	83.869	–159.146	30.933	–263.129	–198.580	–71.348	4.279
			6.437		5.607					
SOL–2	871.00	71.002	125.821	83.869	–153.539	36.540	–263.129	–192.973	–71.348	4.279
	900.00	71.002	128.147	85.259	–151.480	38.599	–266.812	–192.951	–67.299	3.906
	1000.00	71.002	135.628	89.928	–144.379	45.700	–280.007	–192.921	–53.340	2.786
	1100.00	71.002	142.395	94.395	–137.279	52.800	–293.914	–200.864	–38.614	1.834
	1200.00	71.002	148.573	98.656	–130.179	59.900	–308.467	–200.987	–23.859	1.039
	1300.00	71.002	154.256	102.718	–123.079	67.000	–323.612	–201.082	–9.094	0.365
	1400.00	71.002	159.518	106.589	–115.978	74.101	–339.304	–201.205	5.679	–0.212
	1473.00	71.002	163.127	109.302	–110.795	79.284	–351.081	–201.322	16.469	–0.584
			16.971		24.999					
LIQ	1473.00	74.998	180.099	109.302	–85.796	104.283	–351.081	–176.323	16.469	–0.584
	1500.00	74.998	181.461	110.589	–83.771	106.308	–355.963	–176.264	20.002	–0.697
	1600.00	74.998	186.301	115.171	–76.272	113.807	–374.353	–176.074	33.080	–1.080
	1700.00	74.998	190.848	119.491	–68.772	121.307	–393.213	–175.926	46.148	–1.418
	1800.00	74.998	195.135	123.575	–61.272	128.807	–412.514	–175.818	59.208	–1.718
	1900.00	74.998	199.190	127.449	–53.772	136.307	–432.232	–175.750	72.263	–1.987
	2000.00	74.998	203.036	131.133	–46.272	143.807	–452.345	–175.718	85.315	–2.228

References

Phase	H / S	C_p
SOL–1	Tk1	Pa3
SOL–2	Pa3	Pa3
LIQ	Pa3	Pa3

264.231

BARIUM MONOIODIDE (GAS) **BaI**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	37.224	278.722	278.722	−42.426	0.000	−125.527	−42.426	−89.603	15.698
	300.00	37.227	278.952	278.723	−42.357	0.069	−126.043	−42.459	−89.896	15.652
	400.00	37.421	289.689	280.185	−38.624	3.802	−154.500	−52.533	−105.136	13.729
	500.00	37.566	298.056	282.953	−34.875	7.551	−183.903	−76.686	−115.937	12.112
	600.00	37.674	304.915	286.059	−31.112	11.314	−214.061	−79.627	−123.517	10.753
	700.00	37.759	310.729	289.179	−27.341	15.085	−244.851	−81.553	−130.688	9.752
	800.00	37.832	315.776	292.195	−23.561	18.865	−276.182	−83.874	−137.549	8.981
	900.00	37.896	320.236	295.068	−19.775	22.651	−307.987	−86.069	−144.125	8.365
	1000.00	37.956	324.232	297.788	−15.982	26.444	−340.214	−88.237	−150.460	7.859
	1100.00	38.014	327.852	300.359	−12.183	30.243	−372.821	−98.340	−155.810	7.399
	1200.00	38.071	331.162	302.790	−8.379	34.047	−405.774	−100.581	−160.935	7.005
	1300.00	38.128	334.212	305.091	−4.569	37.857	−439.044	−102.750	−165.876	6.665
	1400.00	38.185	337.039	307.273	−0.754	41.672	−472.609	−104.900	−170.651	6.367
	1500.00	38.242	339.676	309.347	3.068	45.494	−506.446	−107.047	−175.272	6.104
	1600.00	38.301	342.146	311.320	6.895	49.321	−540.538	−109.191	−179.751	5.868
	1700.00	38.362	344.470	313.202	10.728	53.154	−574.870	−111.333	−184.095	5.657
	1800.00	38.423	346.664	315.001	14.567	56.993	−609.428	−113.471	−188.314	5.465
	1900.00	38.487	348.743	316.723	18.413	60.839	−644.199	−115.606	−192.413	5.290
	2000.00	38.552	350.719	318.374	22.265	64.691	−679.173	−117.738	−196.401	5.129
	2100.00	38.619	352.602	319.959	26.123	68.549	−714.340	−119.865	−200.281	4.982
	2200.00	38.688	354.400	321.484	29.989	72.415	−749.691	−263.157	−202.175	4.800
	2300.00	38.759	356.121	322.953	33.861	76.287	−785.217	−264.600	−199.372	4.528
	2400.00	38.831	357.772	324.369	37.740	80.166	−820.912	−266.275	−196.501	4.277
	2500.00	38.906	359.359	325.737	41.627	84.053	−856.770	−268.195	−193.555	4.044
	2600.00	38.983	360.886	327.060	45.522	87.948	−892.782	−270.369	−190.527	3.828
	2700.00	39.061	362.359	328.340	49.424	91.850	−928.945	−272.803	−187.411	3.626
	2800.00	39.142	363.781	329.581	53.334	95.760	−965.252	−275.499	−184.200	3.436
	2900.00	39.225	365.156	330.784	57.252	99.678	−1001.700	−278.456	−180.888	3.258
	3000.00	39.310	366.487	331.952	61.179	103.605	−1038.282	−281.670	−177.469	3.090

References

Phase	H / S	C_p
GAS	Ja1	Ja1

BaI2 BARIUM IODIDE 391.136

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	77.493	165.143	165.142	−605.425	0.000	−654.662	−605.425	−601.425	105.367
	300.00	77.530	165.622	165.144	−605.282	0.143	−654.968	−605.434	−601.400	104.713
	400.00	79.530	188.200	168.209	−597.429	7.996	−672.709	−622.207	−599.402	78.274
	500.00	81.530	206.161	174.063	−589.376	16.049	−692.456	−666.154	−589.478	61.582
	600.00	83.530	221.203	180.699	−581.123	24.302	−713.844	−666.479	−574.116	49.981
	700.00	85.530	234.229	187.436	−572.670	32.755	−736.630	−665.606	−558.796	41.698
	800.00	87.530	245.781	194.020	−564.017	41.408	−760.641	−664.939	−543.582	35.492
	900.00	89.530	256.206	200.360	−555.164	50.261	−785.749	−663.958	−528.468	30.671
	984.00	91.210	264.268	205.475	−547.573	57.852	−807.613	−662.961	−515.866	27.384
			26.958		26.527					
LIQ	984.00	112.968	291.227	205.475	−521.046	84.379	−807.613	−636.434	−515.866	27.384
	1000.00	112.968	293.049	206.862	−519.238	86.187	−812.287	−635.887	−513.910	26.844
	1100.00	112.968	303.816	215.194	−507.941	97.484	−842.139	−640.389	−501.111	23.796
	1200.00	112.968	313.645	222.995	−496.645	108.780	−873.019	−637.038	−488.597	21.268
	1300.00	112.968	322.687	230.320	−485.348	120.077	−904.841	−633.624	−476.365	19.141
	1400.00	112.968	331.059	237.221	−474.051	131.374	−937.534	−630.200	−464.396	17.327
	1500.00	112.968	338.853	243.739	−462.754	142.671	−971.034	−626.781	−452.673	15.763
	1600.00	112.968	346.144	249.914	−451.457	153.968	−1005.288	−623.369	−441.177	14.403
	1700.00	112.968	352.993	255.778	−440.161	165.264	−1040.248	−619.963	−429.894	13.209
	1800.00	112.968	359.450	261.360	−428.864	176.561	−1075.873	−616.563	−418.812	12.154
	1900.00	112.968	365.558	266.685	−417.567	187.858	−1112.126	−613.168	−407.918	11.214
	2000.00	112.968	371.352	271.775	−406.270	199.155	−1148.974	−609.780	−397.203	10.374
	2100.00	112.968	376.864	276.649	−394.973	210.452	−1186.387	−606.397	−386.658	9.618
	2200.00	112.968	382.119	281.324	−383.677	221.748	−1224.339	−744.189	−374.387	8.889
	2300.00	112.968	387.141	285.817	−372.380	233.045	−1262.803	−740.140	−357.670	8.123
	2337.00	112.968	388.944	287.435	−368.200	237.225	−1277.161	−738.703	−351.528	7.857

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja1	BPT= 2337., L= 183.6 kJ

391.136

BARIUM IODIDE (GAS) **BaI2**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	57.461	348.135	348.135	−302.922	0.000	−406.718	−302.922	−353.481	61.928
	300.00	57.470	348.490	348.136	−302.816	0.106	−407.363	−302.968	−353.795	61.601
	400.00	57.788	365.073	350.395	−297.050	5.872	−443.080	−321.829	−369.773	48.287
	500.00	57.935	377.986	354.669	−291.264	11.658	−480.257	−368.041	−377.279	39.414
	600.00	58.015	388.557	359.463	−285.466	17.456	−518.600	−370.822	−378.871	32.984
	700.00	58.064	397.504	364.274	−279.661	23.261	−557.914	−372.598	−380.080	28.362
	800.00	58.095	405.259	368.923	−273.853	29.069	−598.061	−374.776	−381.002	24.877
	900.00	58.117	412.103	373.348	−268.043	34.879	−638.936	−376.837	−381.655	22.151
	1000.00	58.132	418.227	377.535	−262.230	40.692	−680.457	−378.879	−382.081	19.958
	1100.00	58.144	423.768	381.491	−256.416	46.506	−722.562	−388.864	−381.534	18.118
	1200.00	58.153	428.828	385.228	−250.602	52.320	−765.195	−390.995	−380.773	16.575
	1300.00	58.159	433.483	388.763	−244.786	58.136	−808.314	−393.062	−379.837	15.262
	1400.00	58.165	437.793	392.113	−238.970	63.952	−851.880	−395.118	−378.743	14.131
	1500.00	58.169	441.806	395.294	−233.153	69.769	−895.862	−397.180	−377.501	13.146
	1600.00	58.173	445.561	398.319	−227.336	75.586	−940.233	−399.248	−376.122	12.279
	1700.00	58.176	449.087	401.203	−221.518	81.404	−984.967	−401.321	−374.613	11.510
	1800.00	58.179	452.413	403.956	−215.701	87.221	−1030.044	−403.400	−372.982	10.824
	1900.00	58.181	455.558	406.590	−209.883	93.039	−1075.444	−405.484	−371.235	10.206
	2000.00	58.183	458.543	409.114	−204.065	98.857	−1121.150	−407.574	−369.379	9.647
	2100.00	58.184	461.381	411.536	−198.246	104.676	−1167.147	−409.670	−367.417	9.139
	2200.00	58.186	464.088	413.864	−192.428	110.494	−1213.422	−552.940	−363.471	8.630
	2300.00	58.187	466.675	416.104	−186.609	116.313	−1259.961	−554.369	−354.827	8.058
	2400.00	58.188	469.151	418.263	−180.790	122.132	−1306.753	−556.042	−346.117	7.533
	2500.00	58.189	471.527	420.346	−174.971	127.951	−1353.788	−557.969	−337.331	7.048
	2600.00	58.190	473.809	422.359	−169.152	133.770	−1401.055	−560.161	−328.463	6.599
	2700.00	58.191	476.005	424.305	−163.333	139.589	−1448.547	−562.623	−319.506	6.181
	2800.00	58.192	478.121	426.190	−157.514	145.408	−1496.254	−565.358	−310.452	5.792
	2900.00	58.193	480.163	428.016	−151.695	151.227	−1544.168	−568.365	−301.296	5.427
	3000.00	58.193	482.136	429.787	−145.876	157.046	−1592.284	−571.640	−292.032	5.085

References

Phase	H / S	C_p
GAS	Ja1	Ja1

BaMoO4 — BARIUM MOLYBDATE — 297.265

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[—— J / (K mol) ——]			[—— kJ / mol ——]					[−]
SOL	298.15	114.673	138.001	138.001	−1548.080	0.000	−1589.225	−1548.080	−1439.761	252.240
	300.00	115.054	138.711	138.003	−1547.868	0.212	−1589.481	−1548.072	−1439.089	250.568
	400.00	129.478	174.023	142.720	−1535.559	12.521	−1605.168	−1547.146	−1402.882	183.198
	500.00	137.714	203.866	152.045	−1522.169	25.911	−1624.103	−1546.231	−1366.933	142.803
	600.00	143.514	229.511	162.869	−1508.095	39.985	−1645.802	−1545.920	−1331.103	115.883
	700.00	148.164	251.994	174.028	−1493.504	54.576	−1669.900	−1544.328	−1295.431	96.666
	800.00	152.201	272.047	185.050	−1478.482	69.598	−1696.120	−1542.914	−1259.970	82.268
	900.00	155.882	290.189	195.740	−1463.076	85.004	−1724.246	−1541.177	−1224.702	71.080
	1000.00	159.342	306.793	206.026	−1447.313	100.767	−1754.106	−1539.219	−1189.642	62.141
	1100.00	162.657	322.137	215.893	−1431.212	116.868	−1785.562	−1545.004	−1154.019	54.800
	1200.00	165.873	336.428	225.349	−1414.785	133.295	−1818.499	−1542.738	−1118.573	48.690

References

Phase	H / S	C_p
SOL	Nb1	Ku1

Ba3N2 — TRIBARIUM DINITRIDE — 439.994

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[—— J / (K mol) ——]			[—— kJ / mol ——]					[−]
SOL	298.15	117.179	152.298	152.298	−363.171	0.000	−408.579	−363.171	−295.622	51.792
	300.00	117.361	153.023	152.300	−362.954	0.217	−408.861	−363.164	−295.202	51.399
	400.00	127.194	188.132	157.021	−350.726	12.445	−425.979	−362.815	−272.616	35.600
	500.00	137.026	217.571	166.260	−337.515	25.656	−446.301	−363.961	−249.980	26.115
	600.00	146.858	243.423	177.006	−323.321	39.850	−469.375	−367.231	−226.880	19.752
	700.00	156.691	266.800	188.189	−308.144	55.027	−494.903	−366.548	−203.553	15.189
	800.00	166.523	288.365	199.380	−291.983	71.188	−522.675	−366.138	−180.289	11.772
	900.00	176.356	308.546	210.399	−274.839	88.332	−552.530	−364.446	−157.144	9.120
	1000.00	182.004	327.548	221.175	−256.798	106.373	−584.346	−361.847	−134.247	7.012
	1100.00	182.004	344.895	231.647	−238.598	124.573	−617.982	−382.957	−109.314	5.191
	1200.00	182.004	360.731	241.753	−220.397	142.774	−653.275	−380.538	−84.543	3.680
	1300.00	182.004	375.300	251.473	−202.197	160.974	−690.086	−377.957	−59.980	2.410

References

Phase	H / S	C_p
SOL	Nb1/Ku1	e

261.337

BARIUM NITRATE Ba(NO3)2

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	151.381	213.802	213.802	−992.068	0.000	−1055.813	−992.068	−796.582	139.558
	300.00	151.889	214.740	213.805	−991.787	0.281	−1056.210	−992.056	−795.369	138.486
	400.00	174.982	261.767	220.061	−975.386	16.682	−1080.092	−990.472	−730.001	95.328
	500.00	193.694	302.870	232.596	−956.931	35.137	−1108.366	−987.940	−665.167	69.490
	600.00	210.682	339.703	247.428	−936.703	55.365	−1140.525	−985.001	−600.872	52.311
	700.00	226.855	373.402	263.049	−914.821	77.247	−1176.202	−979.743	−537.257	40.091
	800.00	242.594	404.725	278.823	−891.346	100.722	−1215.126	−973.602	−474.450	30.978

References

Phase	H / S	C_p
SOL	Nb1	Ke1

BaO BARIUM OXIDE 153.326

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	47.278	70.417	70.417	−553.543	0.000	−574.538	−553.543	−525.346	92.038
	300.00	47.332	70.709	70.418	−553.455	0.088	−574.668	−553.535	−525.171	91.440
	400.00	49.898	84.695	72.307	−548.588	4.955	−582.466	−553.140	−515.784	67.354
	500.00	51.785	96.042	75.954	−543.499	10.044	−591.520	−553.386	−506.435	52.907
	600.00	53.223	105.616	80.121	−538.246	15.297	−601.616	−554.540	−496.941	43.263
	700.00	54.395	113.911	84.369	−532.863	20.680	−612.601	−554.602	−487.344	36.366
	800.00	55.406	121.242	88.528	−527.372	26.171	−624.366	−554.993	−477.709	31.191
	900.00	56.313	127.821	92.535	−521.785	31.758	−636.824	−555.201	−468.034	27.164
	1000.00	57.153	133.798	96.367	−516.112	37.431	−649.910	−555.325	−458.342	23.941
	1100.00	57.946	139.283	100.022	−510.356	43.187	−663.568	−563.329	−447.872	21.268
	1200.00	58.706	144.358	103.508	−504.523	49.020	−677.753	−563.415	−437.371	19.038
	1300.00	59.443	149.086	106.834	−498.616	54.927	−692.428	−563.373	−426.868	17.152
	1400.00	60.161	153.518	110.012	−492.636	60.907	−707.560	−563.258	−416.372	15.535
	1500.00	60.867	157.693	113.053	−486.584	66.959	−723.123	−563.086	−405.886	14.134
	1600.00	61.561	161.643	115.968	−480.463	73.080	−739.091	−562.856	−395.413	12.909
	1700.00	62.248	165.396	118.766	−474.272	79.271	−755.445	−562.570	−384.956	11.828
	1800.00	62.928	168.973	121.456	−468.013	85.530	−772.165	−562.228	−374.518	10.868
	1900.00	63.603	172.394	124.048	−461.687	91.856	−789.234	−561.830	−364.100	10.010
	2000.00	64.274	175.673	126.548	−455.293	98.250	−806.639	−561.375	−353.705	9.238
	2100.00	64.942	178.825	128.963	−448.832	104.711	−824.365	−560.866	−343.333	8.540
	2200.00	65.606	181.862	131.299	−442.304	111.239	−842.400	−701.469	−331.102	7.861
	2286.00	66.176	184.388	133.248	−436.638	116.905	−858.149	−700.343	−316.646	7.235
			25.624		58.576					
LIQ	2286.00	66.944	210.012	133.248	−378.062	175.481	−858.149	−641.767	−316.646	7.235
	2300.00	66.944	210.421	133.717	−377.125	176.418	−861.092	−641.585	−314.656	7.146
	2400.00	66.944	213.270	136.973	−370.430	183.113	−882.278	−640.436	−300.467	6.539
	2500.00	66.944	216.003	140.080	−363.736	189.807	−903.742	−639.546	−286.321	5.982
	2600.00	66.944	218.628	143.051	−357.041	196.502	−925.475	−638.926	−272.205	5.469
	2700.00	66.944	221.155	145.897	−350.347	203.196	−947.464	−638.581	−258.108	4.993
	2800.00	66.944	223.589	148.628	−343.653	209.890	−969.702	−638.513	−244.018	4.552
	2900.00	66.944	225.938	151.254	−336.958	216.585	−992.180	−638.722	−229.926	4.141
	3000.00	66.944	228.208	153.781	−330.264	223.279	−1014.887	−639.203	−215.822	3.758

References

Phase	H / S	C_p
SOL	Nb1	Ja1
LIQ	Ja1	Ja1

169.326

BARIUM PEROXIDE **BaO2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	67.344	93.094	93.094	−634.294	0.000	−662.050	−634.294	−582.276	102.012
	300.00	67.396	93.511	93.095	−634.169	0.125	−662.223	−634.276	−581.953	101.327
	400.00	70.199	113.283	95.772	−627.290	7.004	−672.603	−633.354	−564.659	73.737
	500.00	73.002	129.249	100.920	−620.130	14.164	−684.754	−633.059	−547.538	57.201
	600.00	75.806	142.807	106.798	−612.689	21.605	−698.373	−633.605	−530.386	46.174
	700.00	78.609	154.703	112.809	−604.968	29.326	−713.260	−632.956	−513.239	38.298
	800.00	81.412	165.382	118.724	−596.967	37.327	−729.273	−632.506	−496.166	32.396
	900.00	84.216	175.133	124.458	−588.686	45.608	−746.306	−631.722	−479.167	27.810
	1000.00	87.019	184.151	129.981	−580.124	54.170	−764.275	−630.689	−462.270	24.147
	1100.00	89.822	192.577	135.293	−571.282	63.012	−783.116	−637.361	−444.719	21.118

References

Phase	H / S	C_p
SOL	Nb1/Ku1	e

255.288

BARIUM DIALUMINIUM TETRAOXIDE **BaAl2O4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	125.073	148.532	148.532	−2325.886	0.000	−2370.171	−2325.886	−2212.372	387.598
	300.00	125.624	149.307	148.534	−2325.654	0.232	−2370.446	−2325.905	−2211.667	385.085
	400.00	145.743	188.571	153.751	−2311.958	13.928	−2387.386	−2326.151	−2173.522	283.833
	500.00	156.245	222.324	164.177	−2296.812	29.074	−2407.975	−2326.211	−2135.367	223.080
	600.00	162.960	251.442	176.351	−2280.832	45.054	−2431.697	−2326.887	−2097.137	182.572
	700.00	167.888	276.949	188.938	−2264.279	61.607	−2458.143	−2326.394	−2058.891	153.636
	800.00	171.864	299.634	201.383	−2247.285	78.601	−2486.993	−2326.293	−2020.685	131.937
	900.00	175.285	320.079	213.455	−2229.924	95.962	−2517.995	−2326.211	−1982.489	115.061
	1000.00	178.362	338.708	225.062	−2212.240	113.646	−2550.948	−2347.407	−1942.778	101.480
	1100.00	181.215	355.843	236.183	−2194.259	131.627	−2585.687	−2354.799	−1901.571	90.298
	1200.00	183.914	371.728	246.824	−2176.002	149.884	−2622.075	−2354.133	−1860.396	80.981
	1300.00	186.506	386.552	257.009	−2157.480	168.406	−2659.997	−2353.202	−1819.287	73.100
	1400.00	189.020	400.466	266.764	−2138.703	187.183	−2699.355	−2352.060	−1778.259	66.348
	1500.00	191.475	413.591	276.119	−2119.678	206.208	−2740.064	−2350.725	−1737.318	60.499
	1600.00	193.887	426.026	285.103	−2100.410	225.476	−2782.050	−2349.199	−1696.473	55.384
	1700.00	196.265	437.851	293.743	−2080.902	244.984	−2825.249	−2347.483	−1655.729	50.874
	1800.00	198.616	449.136	302.065	−2061.158	264.728	−2869.603	−2345.579	−1615.092	46.869
	1900.00	200.945	459.937	310.092	−2041.179	284.707	−2915.060	−2343.488	−1574.565	43.288
	2000.00	203.258	470.303	317.845	−2020.969	304.917	−2961.576	−2341.211	−1534.154	40.068
	2100.00	205.557	480.276	325.344	−2000.528	325.358	−3009.108	−2338.749	−1493.861	37.158
	2103.00	205.626	480.569	325.565	−1999.911	325.975	−3010.549	−2338.673	−1492.654	37.075

References

Phase	H / S	C_p	Remarks	
SOL	Nb1,K7	e	K7	MPT= 2103.

Ba3Al2O6 TRIBARIUM DIALUMINIUM HEXAOXIDE 561.940

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	215.600	301.248	301.248	−3518.995	0.000	−3608.812	−3518.995	−3352.629	587.367
	300.00	216.396	302.584	301.252	−3518.595	0.400	−3609.371	−3519.004	−3351.597	583.565
	400.00	245.456	369.353	310.158	−3495.317	23.678	−3643.058	−3518.614	−3295.829	430.391
	500.00	260.564	425.897	327.806	−3469.949	49.046	−3682.898	−3519.122	−3240.120	338.493
	600.00	270.179	474.307	348.287	−3443.383	75.612	−3727.967	−3522.026	−3184.058	277.197
	700.00	277.200	516.506	369.368	−3415.999	102.996	−3777.553	−3521.591	−3127.786	233.398
	800.00	282.840	553.901	390.142	−3387.988	131.007	−3831.108	−3522.237	−3071.488	200.548
	900.00	287.676	587.500	410.235	−3359.457	159.538	−3888.207	−3522.574	−3015.120	174.993
	1000.00	292.013	618.037	429.512	−3330.469	188.526	−3948.507	−3544.063	−2957.200	154.468
	1100.00	296.024	646.059	447.941	−3301.065	217.930	−4011.730	−3567.550	−2896.223	137.530
	1200.00	299.813	671.981	465.545	−3271.272	247.723	−4077.649	−3567.186	−2835.205	123.413
	1300.00	303.446	696.123	482.363	−3241.108	277.887	−4146.067	−3566.345	−2774.238	111.470
	1400.00	306.965	718.740	498.448	−3210.586	308.409	−4216.822	−3565.189	−2713.349	101.236
	1500.00	310.400	740.036	513.851	−3179.718	339.277	−4289.771	−3563.769	−2652.551	92.370
	1600.00	313.771	760.176	528.622	−3148.509	370.486	−4364.791	−3562.086	−2591.856	84.615
	1700.00	317.093	779.299	542.810	−3116.965	402.030	−4441.773	−3560.143	−2531.275	77.777
	1800.00	320.376	797.516	556.459	−3085.091	433.904	−4520.621	−3557.942	−2470.816	71.701
	1900.00	323.629	814.925	569.607	−3052.891	466.104	−4601.249	−3555.486	−2410.486	66.269
	2000.00	326.857	831.608	582.293	−3020.366	498.629	−4683.581	−3552.774	−2350.292	61.383
	2023.00	327.596	835.349	585.149	−3012.840	506.155	−4702.751	−3552.115	−2336.467	60.328

References

Phase	H / S	C_p	Remarks	
SOL	Nb1,K7	e	K7	MPT= 2023.

171.342 BARIUM HYDROXIDE **Ba(OH)2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	101.591	107.110	107.110	−946.300	0.000	−978.235	−946.300	−859.499	150.581
	300.00	101.837	107.740	107.112	−946.112	0.188	−978.434	−946.272	−858.960	149.558
	400.00	112.627	138.648	111.253	−935.342	10.958	−990.801	−944.366	−830.130	108.404
	500.00	118.666	164.492	119.390	−923.749	22.551	−1005.995	−942.560	−801.792	83.763
	521.00	119.597	169.393	121.307	−921.247	25.053	−1009.501	−942.273	−795.886	79.794
			0.000		0.000					
SOL−B	521.00	119.597	169.393	121.307	−921.247	25.053	−1009.501	−942.273	−795.886	79.794
	600.00	122.711	186.497	128.786	−911.674	34.626	−1023.572	−941.400	−773.749	67.361
	681.15	125.948	202.260	136.616	−901.587	44.713	−1039.356	−939.383	−751.207	57.607
			24.570		16.736					
LIQ	681.15	141.001	226.830	136.616	−884.851	61.449	−1039.356	−922.647	−751.207	57.607
	700.00	141.001	230.679	139.098	−882.193	64.107	−1043.668	−921.930	−746.472	55.702
	800.00	141.001	249.507	151.748	−868.093	78.207	−1067.699	−918.333	−721.654	47.119
	900.00	141.001	266.114	163.551	−853.993	92.307	−1093.496	−914.705	−697.286	40.469
	1000.00	141.001	280.970	174.563	−839.893	106.407	−1120.863	−911.138	−673.321	35.171
	1100.00	141.001	294.409	184.857	−825.793	120.507	−1149.643	−915.590	−648.941	30.816
	1200.00	141.001	306.678	194.505	−811.693	134.607	−1179.706	−912.261	−624.847	27.199
	1300.00	141.001	317.964	203.574	−797.593	148.707	−1210.946	−908.940	−601.031	24.150
	1400.00	141.001	328.413	212.122	−783.493	162.807	−1243.271	−905.676	−577.468	21.546
	1500.00	141.001	338.141	220.203	−769.392	176.908	−1276.604	−902.484	−554.137	19.297
	1600.00	141.001	347.241	227.862	−755.292	191.008	−1310.878	−899.360	−531.016	17.336
	1700.00	141.001	355.789	235.138	−741.192	205.108	−1346.034	−896.304	−508.088	15.612
	1800.00	141.001	363.849	242.067	−727.092	219.208	−1382.020	−893.312	−485.339	14.084
	1900.00	141.001	371.472	248.679	−712.992	233.308	−1418.790	−890.383	−462.754	12.722
	2000.00	141.001	378.705	255.001	−698.892	247.408	−1456.302	−887.514	−440.322	11.500

References

Phase	H / S	C_p	Remarks	
SOL−A	Ja1	Ja1		
SOL−B	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja1	NDPT= 1325.

$Ba(OH)_2$[g] BARIUM HYDROXIDE (GAS) 171.342

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	77.251	315.165	315.165	−626.554	0.000	−720.520	−626.554	−601.784	105.430
	300.00	77.401	315.643	315.166	−626.411	0.143	−721.104	−626.571	−601.630	104.753
	400.00	82.883	338.760	318.281	−618.362	8.192	−753.866	−627.386	−593.195	77.463
	500.00	85.764	357.593	324.319	−609.917	16.637	−788.714	−628.728	−584.511	61.063
	600.00	87.622	373.404	331.218	−601.242	25.312	−825.285	−630.969	−575.462	50.098
	700.00	88.995	387.018	338.239	−592.409	34.145	−863.321	−632.145	−566.125	42.245
	800.00	90.111	398.977	345.099	−583.452	43.102	−902.633	−633.692	−556.589	36.342
	900.00	91.227	409.654	351.689	−574.385	52.169	−943.074	−635.097	−546.864	31.739
	1000.00	92.347	419.324	357.977	−565.206	61.348	−984.531	−636.451	−536.989	28.049
	1100.00	93.438	428.177	363.962	−555.917	70.637	−1026.912	−645.714	−526.210	24.988
	1200.00	94.483	436.353	369.658	−546.520	80.034	−1070.143	−647.089	−515.284	22.430
	1300.00	95.474	443.955	375.084	−537.022	89.532	−1114.163	−648.369	−504.248	20.261
	1400.00	96.406	451.065	380.260	−527.428	99.126	−1158.918	−649.611	−493.115	18.398
	1500.00	97.278	457.746	385.205	−517.743	108.811	−1204.362	−650.834	−481.894	16.781
	1600.00	98.087	464.050	389.938	−507.974	118.580	−1250.455	−652.042	−470.592	15.363
	1700.00	98.832	470.020	394.475	−498.128	128.426	−1297.161	−653.239	−459.215	14.110
	1800.00	99.513	475.688	398.830	−488.210	138.344	−1344.449	−654.430	−447.767	12.994
	1900.00	100.129	481.085	403.019	−478.227	148.327	−1392.289	−655.618	−436.254	11.993
	2000.00	100.681	486.236	407.052	−468.186	158.368	−1440.657	−656.808	−424.677	11.091

References

Phase	H / S	C_p
GAS	Ja1	Ja1

BaHfO3 BARIUM HAFNIUM TRIOXIDE 363.815

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	108.305	122.173	122.173	−1832.174	0.000	−1868.600	−1832.174	−1745.257	305.762
	300.00	108.570	122.844	122.175	−1831.973	0.201	−1868.826	−1832.155	−1744.718	303.782
	400.00	118.350	155.591	126.573	−1820.567	11.607	−1882.803	−1830.805	−1715.768	224.056
	500.00	123.595	182.612	135.160	−1808.448	23.726	−1899.754	−1829.770	−1687.145	176.255
	600.00	127.056	205.469	145.022	−1795.906	36.268	−1919.187	−1829.559	−1658.643	144.398
	700.00	129.675	225.259	155.103	−1783.064	49.110	−1940.746	−1828.259	−1630.268	121.652
	800.00	131.844	242.720	164.985	−1769.986	62.188	−1964.162	−1827.317	−1602.048	104.603
	900.00	133.753	258.361	174.506	−1756.704	75.470	−1989.229	−1826.229	−1573.953	91.350
	1000.00	135.499	272.545	183.612	−1743.241	88.933	−2015.786	−1825.096	−1545.983	80.754
	1100.00	137.139	285.537	192.295	−1729.608	102.566	−2043.699	−1831.878	−1517.360	72.053
	1200.00	138.707	297.538	200.572	−1715.815	116.359	−2072.860	−1830.776	−1488.815	64.806
	1300.00	140.224	308.700	208.465	−1701.868	130.306	−2103.178	−1829.577	−1460.366	58.678
	1400.00	141.705	319.146	216.002	−1687.771	144.403	−2134.576	−1828.334	−1432.012	53.429
	1500.00	143.158	328.973	223.209	−1673.528	158.646	−2166.987	−1827.062	−1403.748	48.883

References

Phase	H / S	C_p
SOL	Nb1/e	e

213.411 BARIUM METASILICATE **BaSiO3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	90.001	109.600	109.600	−1623.601	0.000	−1656.278	−1623.601	−1540.311	269.856
	300.00	90.343	110.158	109.602	−1623.434	0.167	−1656.481	−1623.605	−1539.794	268.102
	400.00	103.736	138.178	113.331	−1613.662	9.939	−1668.933	−1623.399	−1511.874	197.430
	500.00	112.012	162.270	120.769	−1602.850	20.751	−1683.985	−1623.260	−1484.019	155.034
	600.00	118.273	183.266	129.473	−1591.325	32.276	−1701.285	−1623.678	−1456.131	126.767
	700.00	123.583	201.905	138.513	−1579.227	44.374	−1720.560	−1622.728	−1428.285	106.580
	800.00	128.387	218.725	147.505	−1566.625	56.976	−1741.605	−1621.854	−1400.565	91.448
	900.00	132.895	234.109	156.285	−1553.559	70.042	−1764.257	−1620.549	−1372.977	79.686
	1000.00	137.221	248.336	164.787	−1540.052	83.549	−1788.388	−1618.911	−1345.555	70.285
	1100.00	141.427	261.613	172.993	−1526.119	97.482	−1813.893	−1624.902	−1317.543	62.565
	1200.00	145.552	274.096	180.903	−1511.769	111.832	−1840.684	−1622.719	−1289.694	56.139
	1300.00	149.619	285.907	188.530	−1497.011	126.590	−1868.690	−1620.151	−1262.044	50.710
	1400.00	153.645	297.143	195.890	−1481.847	141.754	−1897.847	−1617.250	−1234.604	46.064
	1500.00	157.640	307.879	203.000	−1466.283	157.318	−1928.102	−1614.031	−1207.382	42.045
	1600.00	161.611	318.180	209.879	−1450.320	173.281	−1959.408	−1610.493	−1180.386	38.536
	1700.00	165.565	328.096	216.543	−1433.961	189.640	−1991.725	−1656.813	−1153.174	35.433
	1800.00	169.504	337.671	223.008	−1417.207	206.394	−2025.016	−1652.412	−1123.674	32.608
	1878.00	172.569	344.926	227.922	−1403.867	219.734	−2051.638	−1648.730	−1100.839	30.619

References

Phase	H / S	C_p	Remarks
SOL	Nb1	Nb1.e	S5 MPT= 1878.

BaSi2O5 BARIUM DISILICATE 273.495

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	134.213	153.134	153.134	−2548.056	0.000	−2593.713	−2548.056	−2410.970	422.392
	300.00	134.775	153.966	153.137	−2547.807	0.249	−2593.997	−2548.069	−2410.119	419.639
	400.00	157.082	196.103	158.731	−2533.107	14.949	−2611.548	−2548.029	−2364.111	308.721
	500.00	171.326	232.771	169.956	−2516.648	31.408	−2633.034	−2547.581	−2318.186	242.179
	600.00	182.397	265.018	183.166	−2498.945	49.111	−2657.955	−2547.357	−2272.323	197.823
	700.00	191.970	293.867	196.955	−2480.218	67.838	−2685.924	−2545.481	−2226.632	166.153
	800.00	200.744	320.080	210.731	−2460.577	87.479	−2716.641	−2543.414	−2181.218	142.419
	900.00	209.053	344.208	224.239	−2440.084	107.972	−2749.871	−2540.648	−2136.101	123.976
	1000.00	217.074	366.651	237.371	−2418.776	129.280	−2785.427	−2537.281	−2091.327	109.240
	1100.00	224.907	387.709	250.090	−2396.676	151.380	−2823.155	−2541.268	−2046.151	97.164
	1200.00	232.612	407.609	262.395	−2373.799	174.257	−2862.930	−2536.807	−2001.332	87.116
	1300.00	240.226	426.529	274.299	−2350.156	197.900	−2904.644	−2531.680	−1956.912	78.630
	1400.00	247.774	444.608	285.823	−2325.756	222.300	−2948.208	−2525.939	−1912.911	71.372
	1500.00	255.274	461.959	296.990	−2300.603	247.453	−2993.542	−2519.597	−1869.341	65.096
	1600.00	262.737	478.672	307.826	−2274.702	273.354	−3040.578	−2512.654	−1826.213	59.620
	1700.00	270.172	494.824	318.354	−2248.057	299.999	−3089.257	−2605.463	−1782.645	54.774
	1800.00	277.584	510.477	328.595	−2220.669	327.387	−3139.526	−2596.863	−1734.489	50.334

References

Phase	H / S	C_p
SOL	Nb1	e

366.737 BARIUM ORTHOSILICATE **Ba2SiO4**

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL	298.15	134.886	176.100	176.100	−2287.799	0.000	−2340.303	−2287.799	−2175.144	381.076
	300.00	135.352	176.936	176.103	−2287.549	0.250	−2340.630	−2287.799	−2174.445	378.605
	400.00	153.219	218.601	181.662	−2273.024	14.775	−2360.464	−2287.312	−2136.722	279.027
	500.00	163.799	254.005	192.683	−2257.138	30.661	−2384.141	−2287.435	−2099.089	219.290
	600.00	171.511	284.580	205.509	−2240.357	47.442	−2411.104	−2289.003	−2061.277	179.450
	700.00	177.869	311.508	218.766	−2222.880	64.919	−2440.935	−2288.119	−2023.403	150.988
	800.00	183.505	335.633	231.892	−2204.807	82.992	−2473.313	−2287.656	−1985.616	129.647
	900.00	188.722	357.551	244.655	−2186.193	101.606	−2507.988	−2286.597	−1947.918	113.054
	1000.00	193.677	377.693	256.965	−2167.071	120.728	−2544.764	−2285.143	−1910.362	99.787
	1100.00	198.463	396.378	268.800	−2147.463	140.336	−2583.479	−2299.218	−1871.433	88.867
	1200.00	203.132	413.848	280.167	−2127.382	160.417	−2623.999	−2297.223	−1832.627	79.772
	1300.00	207.720	430.288	291.088	−2106.839	180.960	−2666.214	−2294.737	−1794.008	72.084
	1400.00	212.249	445.848	301.592	−2085.840	201.959	−2710.028	−2291.866	−1755.596	65.502
	1500.00	216.734	460.645	311.706	−2064.391	223.408	−2755.358	−2288.641	−1717.402	59.805
	1600.00	221.185	474.775	321.460	−2042.494	245.305	−2802.134	−2285.061	−1679.434	54.828
	1700.00	225.611	488.317	330.879	−2020.155	267.644	−2850.294	−2331.305	−1641.254	50.430
	1800.00	230.016	501.337	339.990	−1997.373	290.426	−2899.780	−2326.792	−1600.791	46.454
	1900.00	234.405	513.891	348.814	−1974.152	313.647	−2950.545	−2321.887	−1560.590	42.904
	2000.00	238.782	526.026	357.373	−1950.492	337.307	−3002.545	−2316.589	−1520.657	39.715
	2033.00	240.224	529.946	360.142	−1942.589	345.210	−3019.968	−2314.755	−1507.539	38.734

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	Nb1,e	S5	MPT= 2033.

Ba2Si3O8 DIBARIUM TRISILICATE 486.906

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	224.595	258.199	258.199	−4184.799	0.000	−4261.781	−4184.799	−3963.070	694.313
	300.00	225.500	259.591	258.203	−4184.383	0.416	−4262.260	−4184.815	−3961.694	689.792
	400.00	261.212	329.860	267.542	−4159.872	24.927	−4291.816	−4184.530	−3887.319	507.632
	500.00	283.738	390.709	286.233	−4132.561	52.238	−4327.915	−4183.903	−3813.102	398.352
	600.00	301.073	444.024	308.180	−4103.292	81.507	−4369.707	−4184.057	−3738.921	325.502
	700.00	315.958	491.574	331.042	−4072.427	112.372	−4416.529	−4181.191	−3664.962	273.483
	800.00	329.536	534.662	353.843	−4040.144	144.655	−4467.873	−4178.209	−3591.410	234.495
	900.00	342.355	574.221	376.161	−4006.544	178.255	−4523.344	−4174.098	−3518.294	204.196
	1000.00	354.703	610.935	397.824	−3971.688	213.111	−4582.623	−4169.052	−3445.690	179.984
	1100.00	366.742	645.308	418.776	−3935.614	249.185	−4645.453	−4178.989	−3372.098	160.128
	1200.00	378.572	677.727	439.017	−3898.347	286.452	−4711.619	−4172.304	−3299.031	143.603
	1300.00	390.253	708.491	458.572	−3859.905	324.894	−4780.943	−4164.570	−3226.565	129.645
	1400.00	401.828	737.836	477.480	−3820.300	364.499	−4853.270	−4155.886	−3154.731	117.704
	1500.00	413.323	765.952	495.780	−3779.542	405.257	−4928.469	−4146.284	−3083.549	107.379
	1600.00	424.758	792.992	513.516	−3737.637	447.162	−5006.425	−4135.762	−3013.038	98.366
	1700.00	436.146	819.085	530.728	−3694.592	490.207	−5087.036	−4274.851	−2941.873	90.393
	1800.00	447.498	844.336	547.453	−3650.409	534.390	−5170.214	−4261.808	−2863.834	83.106

References

Phase	H / S	C_p
SOL	Nb1	Nb1,e

233.205 BARIUM TITANIUM TRIOXIDE **BaTiO3**

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL−3	298.15	102.467	107.901	107.901	−1659.797	0.000	−1691.968	−1659.797	−1572.440	275.485
	300.00	102.844	108.536	107.903	−1659.607	0.190	−1692.168	−1659.787	−1571.898	273.692
	394.65	115.797	138.665	111.762	−1649.180	10.617	−1703.904	−1658.834	−1544.292	204.398
			0.509		0.201					
SOL−2	394.65	115.797	139.175	111.762	−1648.979	10.818	−1703.904	−1658.633	−1544.292	204.398
	400.00	116.279	140.737	112.140	−1648.358	11.439	−1704.653	−1658.571	−1542.742	201.461
	500.00	122.794	167.458	120.606	−1636.371	23.426	−1720.100	−1657.678	−1513.902	158.156
	600.00	126.585	190.208	130.359	−1623.888	35.909	−1738.012	−1657.546	−1485.163	129.295
	700.00	129.090	209.921	140.348	−1611.096	48.701	−1758.041	−1656.326	−1456.536	108.688
	800.00	130.910	227.283	150.152	−1598.092	61.705	−1779.918	−1655.513	−1428.052	93.242
	900.00	132.332	242.787	159.598	−1584.927	74.870	−1803.436	−1654.628	−1399.671	81.235
	1000.00	133.506	256.792	168.629	−1571.634	88.163	−1828.426	−1653.789	−1371.389	71.634
	1100.00	134.518	269.565	177.233	−1558.232	101.565	−1854.753	−1660.961	−1342.419	63.746
	1200.00	135.420	281.309	185.423	−1544.734	115.063	−1882.305	−1664.342	−1313.368	57.169
	1300.00	136.244	292.181	193.222	−1531.150	128.647	−1910.986	−1663.194	−1284.167	51.598
	1400.00	137.013	302.306	200.656	−1517.487	142.310	−1940.716	−1662.059	−1255.054	46.827
	1500.00	137.739	311.784	207.752	−1503.749	156.048	−1971.425	−1660.959	−1226.020	42.694
	1600.00	138.434	320.696	214.536	−1489.940	169.857	−2003.054	−1659.903	−1197.059	39.080
	1700.00	139.105	329.109	221.030	−1476.063	183.734	−2035.548	−1658.900	−1168.163	35.893
	1733.00	139.322	331.785	223.114	−1471.469	188.328	−2046.453	−1658.582	−1158.639	34.923
			0.000		0.000					
SOL−1	1733.00	134.934	331.785	223.114	−1471.469	188.328	−2046.453	−1658.582	−1158.639	34.923
	1800.00	134.934	336.904	227.255	−1462.428	197.369	−2068.855	−1658.266	−1139.317	33.062
	1889.00	134.934	343.416	232.575	−1450.419	209.378	−2099.132	−1657.936	−1113.667	30.795

References

Phase	H / S	C_p	Remarks	
SOL−3	Nb1	Tk1,e	Tk1	Tetragonal./TPTS.
SOL−2	Tk1	e		
SOL−1	u	e	Tk1	MPT= 1889.

Ba2TiO4 DIBARIUM TITANIUM TETRAOXIDE 386.532

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	152.634	196.602	196.602	−2243.001	0.000	−2301.618	−2243.001	−2132.899	373.675
	300.00	153.133	197.548	196.605	−2242.718	0.283	−2301.982	−2242.977	−2132.216	371.252
	400.00	171.039	244.402	202.872	−2226.389	16.612	−2324.150	−2241.153	−2095.557	273.652
	500.00	179.857	283.613	215.212	−2208.800	34.201	−2350.607	−2239.995	−2059.323	215.136
	600.00	185.098	316.903	229.457	−2190.533	52.468	−2380.675	−2240.486	−2023.151	176.131
	700.00	188.650	345.718	244.054	−2171.836	71.165	−2413.839	−2238.805	−1987.077	148.278
	800.00	191.302	371.089	258.379	−2152.833	90.168	−2449.705	−2237.874	−1951.182	127.399
	900.00	193.431	393.748	272.184	−2133.593	109.408	−2487.967	−2236.709	−1915.411	111.168
	1000.00	195.235	414.224	285.381	−2114.158	128.843	−2528.382	−2235.526	−1879.777	98.189
	1100.00	196.826	432.908	297.955	−2094.553	148.448	−2570.752	−2250.254	−1842.722	87.504
	1200.00	198.273	450.097	309.927	−2074.797	168.204	−2614.913	−2253.297	−1805.595	78.596
	1300.00	199.618	466.021	321.329	−2054.902	188.099	−2660.729	−2251.704	−1768.351	71.053
	1400.00	200.889	480.861	332.200	−2034.876	208.125	−2708.082	−2250.071	−1731.231	64.593
	1500.00	202.105	494.763	342.579	−2014.726	228.275	−2756.870	−2248.438	−1694.228	58.998
	1600.00	203.280	507.844	352.504	−1994.456	248.545	−2807.007	−2246.813	−1657.334	54.106
	1700.00	204.423	520.202	362.008	−1974.071	268.930	−2858.415	−2245.206	−1620.540	49.793
	1800.00	205.540	531.918	371.125	−1953.573	289.428	−2911.026	−2243.625	−1583.841	45.962
	1900.00	206.638	543.061	379.883	−1932.964	310.037	−2964.779	−2242.074	−1547.229	42.536
	2000.00	207.719	553.688	388.310	−1912.246	330.755	−3019.621	−2254.690	−1510.253	39.444
	2100.00	208.787	563.848	396.429	−1891.420	351.581	−3075.501	−2253.109	−1473.069	36.641
	2133.00	209.137	567.106	399.044	−1884.524	358.477	−3094.162	−2252.574	−1460.816	35.774

References

Phase	H / S	C_p	Remarks
SOL	Nb1	Ku1,Tk1	Tk1 MPT= 2133.

BaUO4 BARIUM URANATE 439.354

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	133.504	168.615	168.615	−1996.998	0.000	−2047.271	−1996.998	−1891.337	331.354
	300.00	133.578	169.441	168.618	−1996.751	0.247	−2047.583	−1996.963	−1890.682	329.197
	400.00	137.603	208.421	173.905	−1983.192	13.806	−2066.560	−1995.201	−1855.533	242.308
	500.00	141.628	239.558	184.023	−1969.230	27.768	−2089.009	−1994.245	−1820.749	190.212
	600.00	145.653	265.736	195.516	−1954.866	42.132	−2114.308	−1994.362	−1786.046	155.489
	700.00	149.678	288.491	207.207	−1940.100	56.898	−2142.043	−1993.556	−1751.400	130.691
	800.00	153.703	308.740	218.656	−1924.930	72.068	−2171.923	−1993.260	−1716.828	112.097
	900.00	157.728	327.076	229.700	−1909.359	87.639	−2203.728	−1992.980	−1682.291	97.638
	1000.00	161.753	343.903	240.290	−1893.385	103.613	−2237.288	−1995.250	−1647.616	86.063
	1100.00	165.778	359.509	250.427	−1877.008	119.990	−2272.468	−2006.704	−1611.900	76.543

References

Phase	H / S	C_p
SOL	Nb1/Ku1	Ku1,Tk1

276.549 BARIUM ZIRCONIUM TRIOXIDE **BaZrO3**

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	100.710	124.683	124.683	−1779.455	0.000	−1816.629	−1779.455	−1694.684	296.902
	300.00	101.030	125.307	124.685	−1779.268	0.187	−1816.861	−1779.449	−1694.158	294.979
	400.00	112.586	156.174	128.815	−1768.511	10.944	−1830.981	−1778.695	−1665.829	217.535
	500.00	118.407	181.984	136.942	−1756.934	22.521	−1847.926	−1778.136	−1637.691	171.088
	600.00	121.971	203.909	146.323	−1744.903	34.552	−1867.249	−1778.363	−1609.585	140.127
	700.00	124.468	222.908	155.937	−1732.575	46.880	−1888.611	−1777.500	−1581.531	118.015
	800.00	126.397	239.659	165.376	−1720.028	59.427	−1911.756	−1777.022	−1553.569	101.438
	900.00	127.996	254.642	174.476	−1707.306	72.149	−1936.484	−1776.447	−1525.671	88.548
	1000.00	129.390	268.201	183.182	−1694.436	85.019	−1962.637	−1775.893	−1497.837	78.239
	1100.00	130.650	280.593	191.482	−1681.433	98.022	−1990.085	−1783.329	−1469.289	69.771
	1200.00	131.819	292.012	199.390	−1668.309	111.146	−2018.723	−1786.675	−1440.534	62.705
	1300.00	132.923	302.607	206.927	−1655.071	124.384	−2048.460	−1785.756	−1411.725	56.724
	1400.00	133.981	312.496	214.118	−1641.726	137.729	−2079.221	−1784.799	−1382.989	51.600
	1500.00	135.004	321.775	220.989	−1628.276	151.179	−2110.939	−1783.834	−1354.322	47.162
	1600.00	136.001	330.520	227.564	−1614.726	164.729	−2143.558	−1782.869	−1325.720	43.280
	1700.00	136.977	338.795	233.866	−1601.077	178.378	−2177.027	−1781.917	−1297.177	39.857
	1800.00	137.938	346.651	239.916	−1587.331	192.124	−2211.303	−1780.989	−1268.690	36.816
	1900.00	138.886	354.135	245.732	−1573.490	205.965	−2246.345	−1780.097	−1240.254	34.097
	2000.00	139.824	361.282	251.332	−1559.554	219.901	−2282.119	−1779.250	−1211.863	31.651

References

Phase	H / S	C_p
SOL	Nb1	e

BaS BARIUM SULFIDE 169.393

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	49.444	78.241	78.241	−460.240	0.000	−483.567	−460.240	−455.400	79.784
	300.00	49.455	78.547	78.242	−460.149	0.091	−483.713	−460.243	−455.370	79.287
	400.00	50.041	92.854	80.189	−455.174	5.066	−492.315	−462.836	−453.617	59.236
	500.00	50.626	104.083	83.884	−450.140	10.100	−502.182	−465.511	−451.047	47.121
	600.00	51.212	113.365	88.046	−445.048	15.192	−513.068	−468.822	−447.840	38.988
	700.00	51.798	121.304	92.244	−439.898	20.342	−524.811	−470.798	−444.193	33.146
	800.00	52.384	128.259	96.320	−434.689	25.551	−537.296	−473.163	−440.233	28.744
	900.00	52.969	134.462	100.219	−429.421	30.819	−550.437	−528.193	−434.827	25.237
	1000.00	53.555	140.074	103.929	−424.095	36.145	−564.169	−528.770	−424.422	22.170
	1100.00	54.141	145.205	107.451	−418.710	41.530	−578.436	−537.231	−413.194	19.621
	1200.00	54.727	149.941	110.797	−413.267	46.973	−593.197	−537.781	−401.892	17.494
	1300.00	55.312	154.345	113.980	−407.765	52.475	−608.413	−538.208	−390.550	15.692
	1400.00	55.898	158.466	117.012	−402.204	58.036	−624.056	−538.565	−379.178	14.147
	1500.00	56.484	162.342	119.906	−396.585	63.655	−640.098	−538.868	−367.782	12.807
	1600.00	57.070	166.006	122.673	−390.908	69.332	−656.517	−539.117	−356.368	11.634
	1700.00	57.656	169.484	125.326	−385.171	75.069	−673.293	−539.312	−344.940	10.599
	1800.00	58.241	172.796	127.871	−379.376	80.864	−690.409	−539.452	−333.502	9.678
	1900.00	58.827	175.960	130.320	−373.523	86.717	−707.848	−539.538	−322.058	8.854
	2000.00	59.413	178.993	132.678	−367.611	92.629	−725.596	−539.569	−310.611	8.112

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	Nb1,e	Mi1	MPT= 2500.

233.391

BARIUM SULFATE — BaSO4

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−2	298.15	102.160	132.202	132.202	−1473.199	0.000	−1512.615	−1473.199	−1362.119	238.638
	300.00	102.647	132.835	132.204	−1473.010	0.189	−1512.860	−1473.212	−1361.429	237.046
	400.00	119.793	165.067	136.482	−1461.765	11.434	−1527.792	−1475.478	−1324.048	172.903
	500.00	127.729	192.749	145.040	−1449.345	23.854	−1545.719	−1476.884	−1286.060	134.354
	600.00	132.040	216.453	155.016	−1436.337	36.862	−1566.209	−1478.598	−1247.728	108.624
	700.00	134.639	237.018	165.295	−1422.993	50.206	−1588.905	−1478.890	−1209.233	90.234
	800.00	136.326	255.114	175.414	−1409.439	63.760	−1613.530	−1479.584	−1170.666	76.437
	900.00	137.483	271.242	185.182	−1395.745	77.454	−1639.863	−1532.999	−1130.859	65.633
	1000.00	138.310	285.772	194.527	−1381.953	91.246	−1667.726	−1532.033	−1086.229	56.739
	1100.00	138.923	298.985	203.431	−1368.090	105.109	−1696.973	−1539.035	−1040.926	49.429
	1200.00	139.388	311.094	211.906	−1354.173	119.026	−1727.486	−1538.209	−995.679	43.341
	1300.00	139.751	322.265	219.971	−1340.216	132.983	−1759.161	−1537.347	−950.503	38.192
	1400.00	140.038	332.633	227.652	−1326.226	146.973	−1791.912	−1536.501	−905.394	33.781
	1423.00	140.096	334.915	229.367	−1323.004	150.195	−1799.589	−1536.311	−895.027	32.854
			7.057		10.042					
SOL−1	1423.00	139.746	341.972	229.367	−1312.962	160.237	−1799.589	−1526.269	−895.027	32.854
	1500.00	139.746	349.337	235.339	−1302.202	170.997	−1826.207	−1525.682	−860.886	29.979
	1600.00	139.746	358.356	242.748	−1288.227	184.972	−1861.596	−1524.968	−816.589	26.659
	1700.00	139.746	366.828	249.800	−1274.253	198.946	−1897.860	−1524.308	−772.336	23.731
	1800.00	139.746	374.815	256.526	−1260.278	212.921	−1934.946	−1523.701	−728.120	21.130
	1900.00	139.746	382.371	262.952	−1246.304	226.895	−1972.808	−1523.144	−683.937	18.803
	1953.00	139.746	386.216	266.245	−1238.897	234.302	−1993.176	−1522.870	−660.531	17.666

References

Phase	H / S	C_p	Remarks
SOL−2	Nb1	Ku1,Tk1	
SOL−1	Tk1	e	Tk1 MPT= 1953., L= 40.6 kJ

393.364

2−BARIUM TIN — Ba2Sn

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	73.143	126.775	126.775	−376.560	0.000	−414.358	−376.560	−361.875	63.399
	300.00	73.220	127.228	126.777	−376.425	0.135	−414.593	−376.578	−361.784	62.992
	400.00	77.404	148.865	129.699	−368.893	7.667	−428.439	−377.814	−356.687	46.579
	500.00	81.588	166.587	135.354	−360.944	15.616	−444.237	−380.450	−351.139	36.683
	600.00	85.772	181.832	141.858	−352.576	23.984	−461.675	−391.691	−343.564	29.910
	700.00	89.956	195.368	148.553	−343.789	32.771	−480.547	−393.399	−335.417	25.029
	800.00	94.140	207.653	155.184	−334.585	41.975	−500.707	−395.467	−326.990	21.350
	900.00	98.324	218.982	161.651	−324.961	51.599	−522.046	−396.873	−318.338	18.476

References

Phase	H / S	C_p
SOL	Ku1	e

BaTe — BARIUM TELLURIDE — 264.927

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	45.172	97.906	97.906	−313.800	0.000	−342.991	−313.800	−309.624	54.245
	300.00	45.187	98.185	97.906	−313.716	0.084	−343.172	−313.816	−309.598	53.906
	400.00	46.024	111.299	99.689	−309.156	4.644	−353.676	−314.928	−308.041	40.226
	500.00	46.861	121.659	103.082	−304.512	9.288	−365.341	−316.996	−306.105	31.979
	600.00	47.698	130.277	106.916	−299.784	14.016	−377.950	−320.222	−303.633	26.434
	700.00	48.534	137.692	110.795	−294.972	18.828	−391.357	−322.575	−300.692	22.438
	800.00	49.371	144.228	114.574	−290.077	23.723	−405.459	−343.085	−295.491	19.294
	900.00	50.208	150.091	118.200	−285.098	28.702	−420.180	−345.963	−289.367	16.794
	1000.00	51.045	155.424	121.660	−280.035	33.765	−435.460	−348.733	−282.929	14.779
	1100.00	51.882	160.329	124.955	−274.889	38.911	−451.250	−359.357	−275.450	13.080
	1200.00	52.718	164.879	128.095	−269.659	44.141	−467.514	−362.037	−267.703	11.653
	1300.00	53.555	169.132	131.090	−264.345	49.455	−484.216	−364.564	−259.738	10.436
	1400.00	54.392	173.131	133.951	−258.948	54.852	−501.331	−413.430	−249.092	9.294
	1500.00	55.229	176.912	136.690	−253.467	60.333	−518.835	−414.199	−237.326	8.264

References

Phase	H / S	C_p
SOL	Mi1	e

BaWO4 — BARIUM TUNGSTATE — 385.175

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	133.824	154.808	154.808	−1703.001	0.000	−1749.157	−1703.001	−1598.481	280.047
	300.00	133.888	155.636	154.811	−1702.753	0.248	−1749.444	−1702.959	−1597.832	278.207
	400.00	137.361	194.629	160.104	−1689.191	13.810	−1767.042	−1700.791	−1563.126	204.123
	500.00	140.833	225.653	170.213	−1675.281	27.720	−1788.108	−1699.320	−1528.900	159.723
	600.00	144.306	251.637	181.676	−1661.024	41.977	−1812.006	−1698.767	−1494.873	130.140
	700.00	147.779	274.143	193.313	−1646.420	56.581	−1838.320	−1697.090	−1461.030	109.023
	800.00	151.252	294.102	204.687	−1631.468	71.533	−1866.750	−1695.671	−1427.403	93.200
	900.00	154.724	312.118	215.639	−1616.170	86.831	−1897.076	−1693.963	−1393.968	80.904
	1000.00	158.197	328.599	226.122	−1600.524	102.477	−1929.123	−1692.042	−1360.737	71.078
	1100.00	161.670	343.840	236.139	−1584.530	118.471	−1962.754	−1697.851	−1326.940	63.011
	1200.00	165.142	358.056	245.713	−1568.190	134.811	−1997.857	−1695.577	−1293.319	56.297
	1300.00	168.615	371.412	254.874	−1551.502	151.499	−2034.337	−1693.000	−1259.900	50.623

References

Phase	H / S	C_p
SOL	Nb1/e	e

9.012 BERYLLIUM **Be**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	16.449	9.440	9.440	0.000	0.000	−2.815	0.000	0.000	0.000
	300.00	16.529	9.542	9.440	0.031	0.031	−2.832	0.000	0.000	0.000
	400.00	19.957	14.809	10.135	1.870	1.870	−4.054	0.000	0.000	0.000
	500.00	21.984	19.498	11.549	3.975	3.975	−5.774	0.000	0.000	0.000
	600.00	23.339	23.632	13.225	6.244	6.244	−7.935	0.000	0.000	0.000
	700.00	24.420	27.313	14.980	8.634	8.634	−10.486	0.000	0.000	0.000
	800.00	25.374	30.638	16.732	11.124	11.124	−13.386	0.000	0.000	0.000
	900.00	26.221	33.676	18.449	13.705	13.705	−16.604	0.000	0.000	0.000
	1000.00	27.265	36.493	20.114	16.379	16.379	−20.114	0.000	0.000	0.000
	1100.00	28.300	39.140	21.724	19.157	19.157	−23.897	0.000	0.000	0.000
	1200.00	29.300	41.646	23.281	22.038	22.038	−27.937	0.000	0.000	0.000
	1300.00	30.295	44.030	24.786	25.017	25.017	−32.222	0.000	0.000	0.000
	1400.00	31.298	46.312	26.243	28.097	28.097	−36.740	0.000	0.000	0.000
	1500.00	32.292	48.505	27.654	31.277	31.277	−41.481	0.000	0.000	0.000
	1560.00	32.864	49.783	28.481	33.232	33.232	−44.430	0.000	0.000	0.000
			5.061		7.895					
LIQ	1560.00	28.791	54.844	28.481	41.127	41.127	−44.430	0.000	0.000	0.000
	1600.00	28.875	55.574	29.149	42.280	42.280	−46.638	0.000	0.000	0.000
	1700.00	29.086	57.331	30.756	45.178	45.178	−52.284	0.000	0.000	0.000
	1800.00	29.297	58.999	32.279	48.097	48.097	−58.102	0.000	0.000	0.000
	1900.00	29.508	60.589	33.727	51.037	51.037	−64.082	0.000	0.000	0.000
	2000.00	29.719	62.108	35.109	53.999	53.999	−70.217	0.000	0.000	0.000
	2100.00	29.930	63.563	36.429	56.981	56.981	−76.501	0.000	0.000	0.000
	2200.00	30.141	64.960	37.694	59.985	59.985	−82.928	0.000	0.000	0.000
	2300.00	30.352	66.305	38.909	63.009	63.009	−89.491	0.000	0.000	0.000
	2400.00	30.562	67.601	40.078	66.055	66.055	−96.187	0.000	0.000	0.000
	2500.00	30.773	68.853	41.204	69.122	69.122	−103.010	0.000	0.000	0.000
	2600.00	30.984	70.064	42.291	72.210	72.210	−109.956	0.000	0.000	0.000
	2700.00	31.195	71.237	43.341	75.319	75.319	−117.022	0.000	0.000	0.000
	2741.44	31.282	71.713	43.767	76.613	76.613	−119.983	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks	
SOL	Ja2	Ja1		
LIQ	Ja2	Ja1	Ja2	BPT= 2741.437, L= 291.572 kJ

Be[g] BERYLLIUM (GAS) 9.012

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	20.786	136.274	136.274	324.000	0.000	283.370	324.000	286.184	–50.138
	300.00	20.786	136.403	136.274	324.038	0.038	283.118	324.008	285.950	–49.788
	400.00	20.786	142.382	137.090	326.117	2.117	269.164	324.248	273.218	–35.679
	500.00	20.786	147.021	138.629	328.196	4.196	254.685	324.221	260.460	–27.210
	600.00	20.786	150.810	140.353	330.274	6.274	239.788	324.030	247.723	–21.566
	700.00	20.786	154.015	142.082	332.353	8.353	224.543	323.719	235.028	–17.538
	800.00	20.786	156.790	143.751	334.432	10.432	208.999	323.307	222.385	–14.520
	900.00	20.786	159.238	145.338	336.510	12.510	193.196	322.805	209.799	–12.176
	1000.00	20.786	161.428	146.840	338.589	14.589	177.160	322.210	197.274	–10.305
	1100.00	20.786	163.410	148.257	340.667	16.667	160.917	321.510	184.813	–8.776
	1200.00	20.786	165.218	149.597	342.746	18.746	144.484	320.708	172.421	–7.505
	1300.00	20.786	166.882	150.863	344.825	20.825	127.878	319.807	160.100	–6.433
	1400.00	20.786	168.422	152.063	346.903	22.903	111.112	318.806	147.851	–5.516
	1500.00	20.786	169.857	153.202	348.982	24.982	94.197	317.705	135.678	–4.725
	1600.00	20.786	171.198	154.285	351.060	27.060	77.144	308.781	123.782	–4.041
	1700.00	20.786	172.458	155.318	353.139	29.139	59.960	307.961	112.244	–3.449
	1800.00	20.786	173.646	156.303	355.218	31.218	42.654	307.121	100.756	–2.924
	1900.00	20.786	174.770	157.246	357.296	33.296	25.233	306.259	89.315	–2.455
	2000.00	20.788	175.837	158.149	359.375	35.375	7.702	305.377	77.919	–2.035
	2100.00	20.785	176.851	159.016	361.454	37.454	–9.933	304.473	66.568	–1.656
	2200.00	20.787	177.818	159.848	363.532	39.532	–27.666	303.548	55.261	–1.312
	2300.00	20.795	178.742	160.650	365.612	41.612	–45.495	302.602	43.997	–0.999
	2400.00	20.808	179.627	161.422	367.692	43.692	–63.413	301.637	32.774	–0.713
	2500.00	20.827	180.477	162.168	369.773	45.773	–81.419	300.652	21.591	–0.451
	2600.00	20.850	181.294	162.888	371.857	47.857	–99.508	299.648	10.448	–0.210
	2700.00	20.879	182.082	163.584	373.944	49.944	–117.677	298.625	–0.655	0.013
	2800.00	20.913	182.842	164.258	376.033	52.033	–135.923	0.000	0.000	0.000
	2900.00	20.952	183.576	164.912	378.126	54.126	–154.244	0.000	0.000	0.000
	3000.00	20.997	184.287	165.546	380.224	56.224	–172.638	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Ja2	Ja1

304.875

BERYLLIUM ARSENATE

$Be_3(AsO_4)_2$

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	232.517	207.275	207.275	−2738.051	0.000	−2799.850	−2738.051	−2525.457	442.450
	300.00	233.444	208.717	207.280	−2737.620	0.431	−2800.235	−2738.020	−2524.138	439.491
	400.00	267.729	281.175	216.926	−2712.351	25.700	−2824.822	−2735.166	−2453.220	320.358
	500.00	286.227	343.073	236.127	−2684.578	53.473	−2856.115	−2731.078	−2383.191	248.970
	600.00	298.512	396.406	258.500	−2655.307	82.744	−2893.151	−2726.499	−2314.039	201.455
	700.00	307.863	443.150	281.608	−2624.972	113.079	−2935.177	−2721.705	−2245.673	167.574
	800.00	315.650	484.781	304.450	−2593.786	144.265	−2981.611	−2716.803	−2178.002	142.209
	900.00	322.528	522.363	326.608	−2561.872	176.179	−3031.998	−2711.817	−2110.950	122.516
	1000.00	328.841	556.676	347.924	−2529.299	208.752	−3085.975	−2706.734	−2044.459	106.792
	1100.00	334.786	588.299	368.357	−2496.115	241.936	−3143.244	−2701.597	−1978.480	93.950
	1200.00	340.479	617.675	387.924	−2462.350	275.701	−3203.560	−2696.570	−1912.966	83.269
	1300.00	345.996	645.146	406.665	−2428.025	310.026	−3266.716	−2691.991	−1847.856	74.248
	1331.00	347.678	653.320	412.315	−2417.273	320.778	−3286.842	−2690.738	−1827.741	71.729

References

Phase	H / S	C_p
SOL	G1	G1

88.916

BERYLLIUM MONOBROMIDE (GAS)

BeBr[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	32.597	228.556	228.556	120.081	0.000	51.937	120.081	77.442	−13.568
	300.00	32.632	228.758	228.556	120.141	0.060	51.514	120.041	77.178	−13.438
	400.00	34.214	238.376	229.857	123.489	3.408	28.138	104.308	66.100	−8.632
	500.00	35.248	246.130	232.361	126.965	6.884	3.900	103.834	56.601	−5.913
	600.00	35.922	252.620	235.212	130.526	10.445	−21.046	103.266	47.207	−4.110
	700.00	36.385	258.195	238.106	134.143	14.062	−46.593	102.625	37.913	−2.829
	800.00	36.719	263.076	240.929	137.799	17.718	−72.662	101.917	28.716	−1.875
	900.00	36.971	267.416	243.635	141.484	21.403	−99.191	101.143	19.612	−1.138
	1000.00	37.169	271.322	246.212	145.191	25.110	−126.131	100.293	10.598	−0.554
	1100.00	37.329	274.872	248.658	148.917	28.836	−153.443	99.353	1.673	−0.079
	1200.00	37.464	278.126	250.980	152.656	32.575	−181.095	98.323	−7.163	0.312
	1300.00	37.579	281.130	253.185	156.409	36.328	−209.060	97.203	−15.908	0.639
	1400.00	37.681	283.918	255.282	160.172	40.091	−237.314	95.991	−24.564	0.917
	1500.00	37.772	286.521	257.279	163.944	43.863	−265.838	94.685	−33.130	1.154
	1600.00	37.854	288.962	259.184	167.726	47.645	−294.613	85.562	−41.406	1.352
	1700.00	37.931	291.259	261.004	171.515	51.434	−323.625	84.549	−49.310	1.515
	1800.00	38.002	293.429	262.745	175.312	55.231	−352.861	83.520	−57.155	1.659
	1900.00	38.069	295.486	264.415	179.115	59.034	−382.307	82.475	−64.942	1.785
	2000.00	38.132	297.440	266.018	182.925	62.844	−411.954	81.412	−72.673	1.898

References

Phase	H / S	C_p
GAS	Ja1	Ja1

BeBr2 BERYLLIUM BROMIDE 168.820

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[	J / (K mol)	]	[		kJ / mol		]	
SOL	298.15	66.063	100.416	100.416	−355.640	0.000	−385.579	−355.640	−337.383	59.108
	300.00	66.107	100.825	100.417	−355.518	0.122	−385.765	−355.688	−337.270	58.724
	400.00	70.636	120.416	103.057	−348.696	6.944	−396.863	−385.188	−324.992	42.440
	500.00	74.787	136.651	108.197	−341.413	14.227	−409.739	−383.702	−310.112	32.397
	600.00	77.642	150.555	114.126	−333.783	21.857	−424.116	−382.060	−295.546	25.730
	700.00	79.687	162.684	120.215	−325.912	29.728	−439.791	−380.313	−281.263	20.988
	781.00	81.043	171.484	125.083	−319.401	36.239	−453.330	−378.847	−269.883	18.050
			12.589		9.832					
LIQ	781.00	112.968	184.073	125.083	−309.569	46.071	−453.330	−369.015	−269.883	18.050
	800.00	112.968	186.788	126.517	−307.423	48.217	−456.853	−368.062	−267.483	17.465
	900.00	112.968	200.094	133.967	−296.126	59.514	−476.210	−363.104	−255.210	14.812
	1000.00	112.968	211.996	141.185	−284.829	70.811	−496.825	−358.246	−243.483	12.718

References

Phase	H / S	C_p	Remarks
SOL	Ja1	Ja1	Ja1 NSPT= 752.
LIQ	Ja1	Ja1	

BeBr2[g] BERYLLIUM BROMIDE (GAS) 168.820

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[	J / (K mol)	]	[		kJ / mol		]	
GAS	298.15	53.319	273.743	273.743	−229.283	0.000	−310.899	−229.283	−262.704	46.025
	300.00	53.366	274.073	273.744	−229.184	0.099	−311.406	−229.355	−262.911	45.777
	400.00	55.787	289.768	275.867	−223.723	5.560	−339.630	−260.214	−267.759	34.966
	500.00	57.526	302.417	279.953	−218.051	11.232	−369.260	−260.340	−269.632	28.168
	600.00	58.692	313.015	284.604	−212.236	17.047	−400.045	−260.513	−271.475	23.634
	700.00	59.495	322.126	289.329	−206.325	22.958	−431.813	−260.726	−273.286	20.393
	800.00	60.067	330.110	293.938	−200.345	28.938	−464.433	−260.985	−275.063	17.960
	900.00	60.490	337.211	298.359	−194.316	34.967	−497.806	−261.294	−276.805	16.065
	1000.00	60.812	343.601	302.569	−188.250	41.033	−531.852	−261.668	−278.509	14.548
	1100.00	61.061	349.410	306.567	−182.156	47.127	−566.507	−262.125	−280.172	13.304
	1200.00	61.259	354.731	310.362	−176.040	53.243	−601.717	−262.669	−281.789	12.266
	1300.00	61.418	359.641	313.966	−169.906	59.377	−637.439	−263.300	−283.357	11.385
	1400.00	61.546	364.198	317.394	−163.757	65.526	−673.634	−264.022	−284.874	10.629
	1500.00	61.651	368.448	320.657	−157.597	71.686	−710.269	−264.839	−286.335	9.971
	1600.00	61.736	372.429	323.770	−151.428	77.855	−747.315	−273.475	−287.539	9.387
	1700.00	61.805	376.174	326.743	−145.251	84.032	−784.747	−274.004	−288.402	8.862
	1800.00	61.860	379.708	329.589	−139.067	90.216	−822.542	−274.553	−289.233	8.393
	1900.00	61.903	383.054	332.315	−132.879	96.404	−860.682	−275.123	−290.033	7.974
	2000.00	61.936	386.230	334.932	−126.687	102.596	−899.148	−275.715	−290.802	7.595

References

Phase	H / S	C_p
GAS	Ja1	Ja1

30.035 DIBERYLLIUM CARBIDE **Be2C**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	43.264	16.318	16.318	−116.985	0.000	−121.850	−116.985	−114.510	20.062
	300.00	43.304	16.585	16.318	−116.905	0.080	−121.881	−116.982	−114.494	19.935
	400.00	45.440	29.336	18.042	−112.468	4.517	−124.202	−117.260	−113.645	14.841
	500.00	47.576	39.705	21.369	−107.817	9.168	−127.669	−118.150	−112.648	11.768
	600.00	49.713	48.568	25.180	−102.952	14.033	−132.093	−119.405	−111.434	9.701
	700.00	51.849	56.391	29.091	−97.874	19.111	−137.348	−120.884	−109.991	8.208
	800.00	53.985	63.454	32.951	−92.583	24.402	−143.346	−122.498	−108.326	7.073
	900.00	56.122	69.936	36.705	−87.077	29.908	−150.020	−124.186	−106.454	6.178
	1000.00	58.258	75.960	40.333	−81.358	35.627	−157.318	−125.934	−104.391	5.453
	1100.00	60.394	81.613	43.831	−75.426	41.559	−165.200	−127.748	−102.149	4.851
	1200.00	62.531	86.959	47.205	−69.279	47.706	−173.630	−129.608	−99.740	4.342
	1300.00	64.667	92.049	50.460	−62.920	54.065	−182.583	−131.499	−97.175	3.905
	1400.00	66.803	96.919	53.606	−56.346	60.639	−192.033	−133.414	−94.463	3.524
	1500.00	68.940	101.601	56.650	−49.559	67.426	−201.960	−135.345	−91.613	3.190
	1600.00	71.076	106.118	59.602	−42.558	74.427	−212.348	−152.735	−88.234	2.881
	1700.00	73.212	110.492	62.467	−35.344	81.641	−223.179	−153.721	−84.172	2.586
	1800.00	75.349	114.737	65.254	−27.916	89.069	−234.442	−154.551	−80.056	2.323
	1900.00	77.485	118.868	67.967	−20.274	96.711	−246.123	−155.225	−75.898	2.087
	2000.00	79.622	122.897	70.613	−12.419	104.566	−258.212	−155.739	−71.709	1.873
	2100.00	81.758	126.833	73.197	−4.350	112.635	−270.699	−156.095	−67.498	1.679
	2200.00	83.894	130.686	75.723	3.933	120.918	−283.576	−156.289	−63.274	1.502
	2300.00	86.031	134.462	78.195	12.429	129.414	−296.834	−156.321	−59.045	1.341
	2400.00	88.167	138.169	80.617	21.139	138.124	−310.466	−156.190	−54.818	1.193
			31.380		75.312					
LIQ	2400.00	92.048	169.549	80.617	96.451	213.436	−310.466	−80.878	−54.818	1.193
	2500.00	92.048	173.306	84.250	105.656	222.641	−327.610	−80.303	−53.744	1.123
	2600.00	92.048	176.916	87.745	114.861	231.846	−345.122	−79.777	−52.692	1.059
	2700.00	92.048	180.390	91.112	124.065	241.050	−362.989	−79.301	−51.659	0.999
	2800.00	92.048	183.738	94.361	133.270	250.255	−381.196	−674.043	−27.202	0.507
	2900.00	92.048	186.968	97.499	142.475	259.460	−399.732	−671.549	−4.145	0.075
	3000.00	92.048	190.089	100.534	151.680	268.665	−418.586	−669.070	18.827	−0.328

References

Phase	H / S	C_p
SOL	A1	A1
LIQ	Ku1	Ja1

BeCl[g] BERYLLIUM MONOCHLORIDE (GAS) 44.465

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	31.648	217.610	217.611	60.668	0.000	−4.213	60.668	31.863	−5.582
	300.00	31.677	217.806	217.611	60.727	0.059	−4.615	60.665	31.684	−5.517
	400.00	33.298	227.147	218.874	63.977	3.309	−26.881	60.343	22.066	−2.882
	500.00	34.498	234.714	221.309	67.371	6.703	−49.986	59.846	12.552	−1.311
	600.00	35.312	241.081	224.088	70.864	10.196	−73.785	59.252	3.147	−0.274
	700.00	35.877	246.569	226.916	74.425	13.757	−98.173	58.585	−6.151	0.459
	800.00	36.286	251.388	229.680	78.034	17.366	−123.076	57.851	−15.350	1.002
	900.00	36.593	255.680	232.335	81.679	21.011	−148.433	57.052	−24.453	1.419
	1000.00	36.832	259.549	234.866	85.351	24.683	−174.198	56.179	−33.463	1.748
	1100.00	37.023	263.068	237.272	89.044	28.376	−200.332	55.217	−42.382	2.013
	1200.00	37.181	266.297	239.558	92.754	32.086	−226.802	54.165	−51.208	2.229
	1300.00	37.314	269.278	241.731	96.479	35.811	−253.583	53.024	−59.944	2.409
	1400.00	37.429	272.048	243.799	100.216	39.548	−280.651	51.791	−68.588	2.559
	1500.00	37.530	274.634	245.769	103.965	43.297	−307.986	50.465	−77.141	2.686
	1600.00	37.621	277.059	247.650	107.722	47.054	−335.572	41.322	−85.402	2.788
	1700.00	37.703	279.342	249.448	111.488	50.820	−363.393	40.288	−93.290	2.866
	1800.00	37.778	281.499	251.169	115.262	54.594	−391.436	39.238	−101.118	2.934
	1900.00	37.847	283.544	252.820	119.044	58.376	−419.689	38.170	−108.886	2.993
	2000.00	37.913	285.487	254.405	122.832	62.164	−448.142	37.084	−116.598	3.045
	2100.00	37.974	287.338	255.929	126.626	65.958	−476.784	35.980	−124.255	3.091
	2200.00	38.033	289.106	257.397	130.426	69.758	−505.606	34.857	−131.859	3.131
	2273.00	38.074	290.348	258.436	133.204	72.536	−526.757	34.025	−137.377	3.157

References

Phase	H / S	C_p
GAS	Ja1	Ja1

79.918

BERYLLIUM CHLORIDE **BeCl2**

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL–B	298.15	62.415	75.814	75.814	–496.222	0.000	–518.826	–496.222	–449.489	78.749
	300.00	62.575	76.201	75.815	–496.106	0.116	–518.967	–496.200	–449.199	78.213
	400.00	68.831	95.150	78.356	–489.505	6.717	–527.565	–494.904	–433.724	56.639
	500.00	72.731	110.953	83.340	–482.415	13.807	–537.892	–493.491	–418.590	43.730
	600.00	75.704	124.485	89.096	–474.989	21.233	–549.680	–491.969	–403.751	35.150
	676.00	77.657	133.630	93.597	–469.160	27.062	–559.494	–490.738	–392.651	30.340
			10.089		6.820					
SOL–A	676.00	81.201	143.719	93.597	–462.340	33.882	–559.494	–483.918	–392.651	30.340
	688.00	81.394	145.149	94.484	–461.364	34.858	–561.227	–483.676	–391.033	29.688
			12.589		8.661					
LIQ	688.00	121.420	157.738	94.484	–452.703	43.519	–561.227	–475.015	–391.033	29.688
	700.00	121.420	159.838	95.586	–451.246	44.976	–563.132	–474.293	–389.574	29.070
	800.00	121.420	176.051	104.653	–439.104	57.118	–579.945	–468.346	–377.879	24.673
	804.00	121.420	176.656	105.010	–438.618	57.604	–580.650	–468.111	–377.427	24.521

References

Phase	H / S	C_p	Remarks	
SOL–B	Ja1	Ja1	Ja1	MPT(SOL–B) = 682.
SOL–A	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja1	BPT= 804., L= 105. kJ

BeCl2[g] BERYLLIUM CHLORIDE (GAS) 79.918

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	51.627	251.149	251.149	−360.242	0.000	−435.122	−360.242	−365.785	64.084
	300.00	51.683	251.469	251.150	−360.146	0.096	−435.587	−360.240	−365.820	63.695
	400.00	54.481	266.737	253.213	−354.832	5.410	−461.527	−360.232	−367.686	48.015
	500.00	56.475	279.123	257.195	−349.278	10.964	−488.839	−360.354	−369.538	38.605
	600.00	57.840	289.547	261.741	−343.558	16.684	−517.287	−360.539	−371.358	32.330
	700.00	58.804	298.540	266.371	−337.723	22.519	−546.701	−360.770	−373.143	27.844
	800.00	59.507	306.440	270.896	−331.806	28.436	−576.958	−361.048	−374.892	24.478
	900.00	60.035	313.481	275.243	−325.828	34.414	−607.961	−361.377	−376.604	21.858
	1000.00	60.438	319.828	279.390	−319.803	40.439	−639.632	−361.767	−378.275	19.759
	1100.00	60.750	325.604	283.332	−313.743	46.499	−671.908	−362.239	−379.904	18.040
	1200.00	60.994	330.901	287.079	−307.656	52.586	−704.736	−362.796	−381.486	16.606
	1300.00	61.186	335.791	290.640	−301.546	58.696	−738.074	−363.439	−383.018	15.390
	1400.00	61.338	340.331	294.029	−295.420	64.822	−771.883	−364.174	−384.497	14.346
	1500.00	61.460	344.567	297.259	−289.280	70.962	−806.130	−365.002	−385.921	13.439
	1600.00	61.559	348.537	300.341	−283.129	77.113	−840.787	−373.650	−387.085	12.637
	1700.00	61.643	352.271	303.287	−276.968	83.274	−875.830	−374.191	−387.909	11.919
	1800.00	61.717	355.797	306.107	−270.800	89.442	−911.235	−374.752	−388.699	11.280
	1900.00	61.785	359.136	308.811	−264.625	95.617	−946.983	−375.335	−389.458	10.707
	2000.00	61.853	362.306	311.407	−258.443	101.799	−983.056	−375.939	−390.186	10.191

References

Phase	H / S	C_p
GAS	Ja1	Ja1

159.835

DIBERYLLIUM TETRACHLORIDE (GAS) **Be2Cl4**[g]

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[——— J / (K mol) ———]			[——— kJ / mol ———]					[–]
GAS	298.15	115.373	381.481	381.481	−748.936	0.000	−862.675	−748.936	−724.001	126.842
	300.00	115.518	382.195	381.483	−748.722	0.214	−863.381	−748.909	−723.846	126.033
	400.00	121.556	416.334	386.097	−736.841	12.095	−903.375	−747.640	−715.693	93.460
	500.00	125.067	443.870	394.987	−724.495	24.441	−946.430	−746.646	−707.826	73.946
	600.00	127.222	466.878	405.104	−711.872	37.064	−991.999	−745.833	−700.141	60.953
	700.00	128.626	486.601	415.372	−699.075	49.861	−1039.696	−745.168	−692.580	51.681
	800.00	129.586	503.844	425.376	−686.162	62.774	−1089.236	−744.646	−685.105	44.733
	900.00	130.271	519.148	434.960	−673.167	75.769	−1140.400	−744.265	−677.686	39.332
	1000.00	130.774	532.901	444.078	−660.113	88.823	−1193.014	−744.041	−670.302	35.013
	1100.00	131.154	545.384	452.729	−647.016	101.920	−1246.938	−744.008	−662.932	31.480
	1200.00	131.446	556.809	460.933	−633.886	115.050	−1302.056	−744.166	−655.555	28.536
	1300.00	131.676	567.340	468.719	−620.729	128.207	−1358.270	−744.515	−648.158	26.043
	1400.00	131.858	577.105	476.116	−607.552	141.384	−1415.498	−745.059	−640.727	23.906
	1500.00	132.006	586.207	483.155	−594.358	154.578	−1473.669	−745.803	−633.250	22.052
	1600.00	132.127	594.731	489.865	−581.152	167.784	−1532.721	−762.194	−625.316	20.414
	1700.00	132.228	602.744	496.272	−567.934	181.002	−1592.598	−762.379	−616.756	18.951
	1800.00	132.313	610.304	502.399	−554.707	194.229	−1653.254	−762.611	−608.184	17.649
	1900.00	132.387	617.460	508.268	−541.472	207.464	−1714.646	−762.891	−599.597	16.484
	2000.00	132.453	624.252	513.899	−528.229	220.707	−1776.734	−763.222	−590.994	15.435

References

Phase	H / S	C_p
GAS	Ja1	Ja1

BeF[g] BERYLLIUM MONOFLUORIDE (GAS) 28.011

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	29.922	205.749	205.749	−169.870	0.000	−231.214	−169.870	−198.168	34.718
	300.00	29.920	205.934	205.749	−169.815	0.055	−231.595	−169.874	−198.343	34.535
	400.00	30.996	214.654	206.931	−166.781	3.089	−252.642	−170.286	−207.780	27.133
	500.00	32.406	221.727	209.204	−163.608	6.262	−274.472	−170.901	−217.085	22.679
	600.00	33.501	227.737	211.804	−160.310	9.560	−296.953	−171.609	−226.256	19.697
	700.00	34.312	232.965	214.462	−156.918	12.952	−319.993	−172.380	−235.304	17.559
	800.00	34.922	237.589	217.070	−153.455	16.415	−343.526	−173.211	−244.237	15.947
	900.00	35.394	241.730	219.584	−149.938	19.932	−367.495	−174.099	−253.062	14.687
	1000.00	35.769	245.480	221.989	−146.379	23.491	−391.859	−175.054	−261.786	13.674
	1100.00	36.075	248.904	224.282	−142.786	27.084	−416.580	−176.093	−270.409	12.841
	1200.00	36.333	252.054	226.467	−139.166	30.704	−441.630	−177.217	−278.935	12.142
	1300.00	36.554	254.971	228.549	−135.521	34.349	−466.983	−178.425	−287.363	11.546
	1400.00	36.747	257.687	230.534	−131.856	38.014	−492.618	−179.721	−295.694	11.032
	1500.00	36.919	260.228	232.430	−128.172	41.698	−518.515	−181.105	−303.931	10.584
	1600.00	37.075	262.616	234.243	−124.472	45.398	−544.658	−190.304	−311.871	10.182
	1700.00	37.218	264.868	235.979	−120.758	49.112	−571.034	−191.388	−319.436	9.815
	1800.00	37.350	266.999	237.643	−117.029	52.841	−597.628	−192.485	−326.937	9.487
	1900.00	37.474	269.022	239.242	−113.288	56.582	−624.430	−193.595	−334.376	9.193
	2000.00	37.591	270.947	240.780	−109.535	60.335	−651.429	−194.720	−341.756	8.926

References

Phase	H / S	C_p
GAS	Ja1	Ja1

47.009

BERYLLIUM FLUORIDE

BeF2

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	51.819	53.354	53.354	−1026.754	0.000	−1042.661	−1026.754	−979.384	171.584
	300.00	52.028	53.675	53.355	−1026.658	0.096	−1042.760	−1026.746	−979.090	170.475
	400.00	62.522	70.095	55.524	−1020.926	5.828	−1048.963	−1026.067	−963.292	125.793
	500.00	76.048	85.391	59.974	−1014.046	12.708	−1056.741	−1024.655	−947.741	99.010
			0.440		0.220					
SOL−2	500.00	64.099	85.831	59.974	−1013.825	12.929	−1056.741	−1024.435	−947.741	99.010
	600.00	67.446	97.814	65.304	−1007.248	19.506	−1065.937	−1023.600	−932.479	81.179
	700.00	70.793	108.462	70.723	−1000.336	26.418	−1076.260	−1022.628	−917.366	68.455
	800.00	74.140	118.134	76.053	−993.090	33.664	−1087.597	−1021.478	−902.405	58.921
	825.00	74.977	120.428	77.363	−991.226	35.528	−1090.579	−1021.159	−898.689	56.900
			5.766		4.757					
LIQ	825.00	79.538	126.194	77.363	−986.469	40.285	−1090.579	−1016.402	−898.689	56.900
	900.00	82.228	133.231	81.728	−980.402	46.352	−1100.309	−1015.018	−888.048	51.541
	1000.00	85.643	142.073	87.325	−972.007	54.747	−1114.079	−1012.978	−874.047	45.656
	1100.00	88.942	150.391	92.684	−963.277	63.477	−1128.707	−1010.733	−860.261	40.850
	1200.00	92.165	158.268	97.824	−954.221	72.533	−1144.143	−1008.285	−846.689	36.855
	1300.00	95.333	165.771	102.764	−944.846	81.908	−1160.348	−1005.636	−833.328	33.484
	1400.00	98.457	172.950	107.523	−935.156	91.598	−1177.286	−1002.789	−820.179	30.601
	1447.10	99.917	176.232	109.706	−930.484	96.270	−1185.510	−1001.380	−814.059	29.384

References

Phase	H / S	C_p	Remarks
SOL−A	Ja2	Ja2	
SOL−2	Ja2	Ja2	
LIQ	Ja2	Ja2	Ja2,e BPT= 1447.1, L= 199.4 kJ

BeF2[g] BERYLLIUM FLUORIDE (GAS) 47.009

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)		]	[kJ / mol				]	
GAS	298.15	46.364	227.556	227.556	−796.006	0.000	−863.852	−796.006	−800.574	140.257
	300.00	46.444	227.843	227.557	−795.920	0.086	−864.273	−796.009	−800.602	139.397
	400.00	50.020	241.725	229.425	−791.086	4.920	−887.776	−796.227	−802.105	104.744
	500.00	52.605	253.178	233.064	−785.949	10.057	−912.538	−796.558	−803.537	83.945
	600.00	54.553	262.950	237.250	−780.586	15.420	−938.356	−796.938	−804.898	70.073
	700.00	56.035	271.476	241.543	−775.053	20.953	−965.086	−797.345	−806.193	60.159
	800.00	57.168	279.035	245.766	−769.391	26.615	−992.619	−797.779	−807.427	52.720
	900.00	58.044	285.821	249.846	−763.629	32.377	−1020.868	−798.245	−808.606	46.930
	1000.00	58.728	291.974	253.756	−757.789	38.217	−1049.762	−798.759	−809.730	42.296
	1100.00	59.270	297.597	257.490	−751.888	44.118	−1079.245	−799.344	−810.800	38.502
	1200.00	59.704	302.774	261.051	−745.938	50.068	−1109.267	−800.002	−811.812	35.337
	1300.00	60.055	307.567	264.447	−739.950	56.056	−1139.787	−800.740	−812.767	32.657
	1400.00	60.344	312.029	267.688	−733.929	62.077	−1170.769	−801.562	−813.662	30.358
	1500.00	60.582	316.200	270.785	−727.883	68.123	−1202.183	−802.472	−814.495	28.363
	1600.00	60.782	320.117	273.747	−721.814	74.192	−1234.001	−811.197	−815.064	26.609
	1700.00	60.951	323.807	276.584	−715.727	80.279	−1266.199	−811.810	−815.287	25.051
	1800.00	61.094	327.295	279.305	−709.625	86.381	−1298.755	−812.439	−815.474	23.664
	1900.00	61.217	330.601	281.919	−703.509	92.497	−1331.652	−813.086	−815.625	22.423
	2000.00	61.323	333.744	284.432	−697.382	98.624	−1364.870	−813.753	−815.741	21.305

References

Phase	H / S	C_p
GAS	Ja2	Ja2

10.020 BERYLLIUM MONOHYDRIDE (GAS) **BeH**[g]

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	29.228	176.716	176.716	316.310	0.000	263.622	316.310	285.918	–50.092
	300.00	29.230	176.897	176.717	316.364	0.054	263.295	316.307	285.729	–49.750
	400.00	29.521	185.335	177.865	319.298	2.988	245.164	315.949	275.581	–35.987
	500.00	30.161	191.987	180.047	322.280	5.970	226.287	315.364	265.554	–27.742
	600.00	30.952	197.555	182.513	325.335	9.025	206.802	314.685	255.655	–22.257
	700.00	31.771	202.388	185.014	328.471	12.161	186.800	313.963	245.873	–18.347
	800.00	32.555	206.682	187.459	331.688	15.378	166.343	313.213	236.197	–15.422
	900.00	33.277	210.559	189.814	334.980	18.670	145.478	312.437	226.617	–13.152
	1000.00	33.925	214.099	192.068	338.341	22.031	124.242	311.622	217.124	–11.341
	1100.00	34.496	217.360	194.221	341.763	25.453	102.667	310.746	207.716	–9.864
	1200.00	34.993	220.383	196.277	345.238	28.928	80.778	309.802	198.391	–8.636
	1300.00	35.422	223.201	198.241	348.759	32.449	58.597	308.783	189.148	–7.600
	1400.00	35.791	225.840	200.119	352.320	36.010	36.144	307.682	179.986	–6.715
	1500.00	36.108	228.321	201.917	355.915	39.605	13.435	306.494	170.905	–5.951
	1600.00	36.384	230.660	203.641	359.540	43.230	–9.516	297.490	162.108	–5.292
	1700.00	36.629	232.873	205.296	363.191	46.881	–32.693	296.596	153.673	–4.722
	1800.00	36.855	234.973	206.887	366.866	50.556	–56.086	295.684	145.292	–4.216
	1900.00	37.071	236.972	208.418	370.562	54.252	–79.685	294.754	136.963	–3.765
	2000.00	37.290	238.879	209.894	374.280	57.970	–103.478	293.806	128.682	–3.361

References

Phase	H / S	C_p
GAS	Nb1	Ja1

BeI[g] BERYLLIUM MONOIODIDE (GAS) 135.917

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	33.476	237.300	237.300	169.870	0.000	99.119	169.870	119.247	−20.892
	300.00	33.510	237.508	237.301	169.932	0.062	98.680	169.851	118.933	−20.708
	400.00	34.951	247.363	238.635	173.361	3.491	74.416	160.622	102.413	−13.374
	500.00	35.821	255.263	241.197	176.903	7.033	49.272	137.962	90.058	−9.408
	600.00	36.375	261.846	244.105	180.515	10.645	23.407	137.428	80.526	−7.010
	700.00	36.753	267.484	247.052	184.172	14.302	−3.066	136.815	71.090	−5.305
	800.00	37.026	272.410	249.920	187.862	17.992	−30.066	136.128	61.746	−4.032
	900.00	37.235	276.784	252.666	191.576	21.706	−57.530	135.371	52.493	−3.047
	1000.00	37.401	280.716	255.278	195.308	25.438	−85.408	134.535	43.329	−2.263
	1100.00	37.539	284.287	257.755	199.055	29.185	−113.661	133.607	34.252	−1.626
	1200.00	37.656	287.559	260.105	202.815	32.945	−142.256	132.586	25.264	−1.100
	1300.00	37.759	290.577	262.334	206.586	36.716	−171.164	131.473	16.365	−0.658
	1400.00	37.851	293.379	264.453	210.366	40.496	−200.364	130.267	7.555	−0.282
	1500.00	37.935	295.993	266.469	214.156	44.286	−229.834	128.967	−1.165	0.041
	1600.00	38.013	298.444	268.392	217.953	48.083	−259.557	119.848	−9.595	0.313
	1700.00	38.086	300.750	270.228	221.758	51.888	−289.518	118.839	−17.654	0.542
	1800.00	38.155	302.929	271.985	225.570	55.700	−319.703	117.813	−25.654	0.744
	1900.00	38.220	304.994	273.668	229.389	59.519	−350.100	116.769	−33.596	0.924
	2000.00	38.284	306.956	275.284	233.214	63.344	−380.698	115.708	−41.482	1.083

References

Phase	H / S	C_p
GAS	Ja1	Ja1

BeI2 BERYLLIUM IODIDE 262.821

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	68.970	120.499	120.499	−188.698	0.000	−224.625	−188.698	−187.183	32.794
	300.00	69.119	120.926	120.501	−188.570	0.128	−224.848	−188.702	−187.173	32.590
	400.00	76.864	141.920	123.310	−181.254	7.444	−238.022	−204.863	−186.082	24.300
	500.00	81.658	159.641	128.852	−173.303	15.395	−253.124	−247.211	−177.326	18.525
	600.00	84.159	174.776	135.277	−164.999	23.699	−269.864	−244.927	−163.561	14.239
	700.00	85.490	187.858	141.875	−156.510	32.188	−288.011	−242.591	−150.185	11.207
	753.00	85.977	194.116	145.335	−151.966	36.732	−298.135	−241.353	−143.234	9.936
			0.028		0.021					
LIQ	753.00	112.968	194.144	145.335	−151.945	36.753	−298.135	−241.332	−143.234	9.936
	800.00	112.968	200.984	148.405	−146.635	42.063	−307.422	−238.979	−137.183	8.957
	900.00	112.968	214.289	155.001	−135.338	53.360	−328.199	−234.043	−124.756	7.241
	1000.00	112.968	226.192	161.535	−124.042	64.656	−350.233	−229.208	−112.874	5.896

References

Phase	H / S	C_p	Remarks
SOL	Ja1	Ja1	
LIQ	Ja1	Ja1	NBPT= 759.4

262.821

BERYLLIUM IODIDE (GAS) **BeI2**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	54.944	291.525	291.525	−64.015	0.000	−150.933	−64.015	−113.491	19.883
	300.00	54.987	291.865	291.526	−63.913	0.102	−151.473	−64.045	−113.798	19.814
	400.00	57.131	307.992	293.710	−58.302	5.713	−181.499	−81.911	−129.559	16.919
	500.00	58.598	320.910	297.901	−52.511	11.504	−212.965	−126.419	−137.167	14.330
	600.00	59.556	331.684	302.658	−46.600	17.415	−245.610	−126.528	−139.307	12.128
	700.00	60.201	340.916	307.480	−40.610	23.405	−279.251	−126.691	−141.425	10.553
	800.00	60.650	348.986	312.175	−34.566	29.449	−313.755	−126.909	−143.516	9.371
	900.00	60.975	356.149	316.670	−28.484	35.531	−349.018	−127.188	−145.576	8.449
	1000.00	61.217	362.587	320.945	−22.374	41.641	−384.960	−127.540	−147.601	7.710
	1100.00	61.402	368.430	325.001	−16.242	47.773	−421.516	−127.982	−149.586	7.103
	1200.00	61.546	373.779	328.846	−10.095	53.920	−458.630	−128.515	−151.527	6.596
	1300.00	61.661	378.710	332.494	−3.934	60.081	−496.258	−129.142	−153.420	6.165
	1400.00	61.753	383.283	335.961	2.237	66.252	−534.360	−129.865	−155.261	5.793
	1500.00	61.830	387.547	339.259	8.416	72.431	−572.904	−130.685	−157.047	5.469
	1600.00	61.893	391.539	342.403	14.602	78.617	−611.860	−139.328	−158.575	5.177
	1700.00	61.946	395.293	345.405	20.794	84.809	−651.204	−139.867	−159.762	4.909
	1800.00	61.991	398.835	348.276	26.991	91.006	−690.912	−140.427	−160.916	4.670
	1900.00	62.030	402.188	351.026	33.192	97.207	−730.964	−141.010	−162.038	4.455
	2000.00	62.063	405.370	353.664	39.397	103.412	−771.344	−141.616	−163.130	4.261

References

Phase	H / S	C_p
GAS	Ja1	Ja1

Be3N2 ALPHA BERYLLIUM NITRIDE 55.050

Phase	T [K]	C_p [J / (K mol)]	S [J / (K mol)]	−(G−H298)/T [J / (K mol)]	H [kJ / mol]	H−H298 [kJ / mol]	G [kJ / mol]	ΔH_f [kJ / mol]	ΔG_f [kJ / mol]	log K_f [−]
SOL	298.15	64.566	34.129	34.129	−588.270	0.000	−598.446	−588.270	−532.874	93.357
	300.00	64.901	34.529	34.130	−588.150	0.120	−598.509	−588.296	−532.530	92.722
	400.00	83.759	55.829	36.905	−580.701	7.569	−603.032	−589.281	−513.769	67.091
	500.00	97.883	76.139	42.744	−571.572	16.698	−609.642	−589.407	−494.860	51.698
	600.00	107.308	94.876	49.895	−561.281	26.989	−618.207	−588.909	−475.990	41.439
	700.00	113.663	111.926	57.558	−550.212	38.058	−628.561	−588.051	−457.234	34.119
	800.00	118.065	127.408	65.337	−538.613	49.657	−640.540	−587.032	−438.615	28.639
	900.00	121.195	141.505	73.029	−526.642	61.628	−653.996	−585.979	−420.126	24.383
	1000.00	123.470	154.398	80.531	−514.403	73.867	−668.801	−585.002	−401.751	20.985
	1100.00	125.154	166.249	87.792	−501.967	86.303	−684.841	−584.200	−383.467	18.209
	1200.00	126.416	177.196	94.792	−489.386	98.884	−702.020	−583.607	−365.246	15.899
	1300.00	127.369	187.354	101.526	−476.694	111.576	−720.254	−583.249	−347.066	13.945
	1400.00	128.093	196.820	107.999	−463.920	124.350	−739.468	−583.147	−328.903	12.272
	1500.00	128.641	205.677	114.219	−451.082	137.188	−759.598	−583.317	−310.739	10.821
	1600.00	129.054	213.994	120.197	−438.196	150.074	−780.586	−606.939	−291.953	9.531
	1700.00	129.361	221.827	125.947	−425.274	162.996	−802.380	−606.238	−272.288	8.366
	1800.00	129.582	229.228	131.481	−412.327	175.943	−824.937	−605.596	−252.663	7.332
	1900.00	129.736	236.238	136.812	−399.360	188.910	−848.213	−605.021	−233.071	6.408
	2000.00	129.834	242.896	141.951	−386.381	201.889	−872.173	−604.514	−213.509	5.576
	2100.00	129.886	249.232	146.910	−373.395	214.875	−896.781	−604.080	−193.969	4.825
	2200.00	129.900	255.274	151.700	−360.405	227.865	−922.009	−603.721	−174.449	4.142
	2300.00	129.882	261.048	156.329	−347.416	240.854	−947.827	−603.438	−154.943	3.519
	2400.00	129.838	266.575	160.809	−334.430	253.840	−974.211	−603.235	−135.448	2.948
	2473.00	129.791	270.465	163.988	−324.953	263.317	−993.813	−603.136	−121.221	2.560
			52.279		129.286					
LIQ	2473.00	133.888	322.744	163.988	−195.667	392.603	−993.813	−473.850	−121.221	2.560
	2500.00	133.888	324.198	165.711	−192.052	396.218	−1002.547	−473.714	−117.372	2.452
	2600.00	133.888	329.449	171.908	−178.663	409.607	−1035.231	−473.255	−103.127	2.072
	2700.00	133.888	334.502	177.837	−165.275	422.995	−1068.430	−472.869	−88.899	1.720
	2800.00	133.888	339.371	183.520	−151.886	436.384	−1102.125	−1365.308	−39.522	0.737
	2900.00	133.888	344.070	188.975	−138.497	449.773	−1136.299	−1361.891	7.767	−0.140
	3000.00	133.888	348.609	194.221	−125.108	463.162	−1170.934	−1358.494	54.939	−0.957

References

Phase	H / S	C_p
SOL	Ja1	Ja1
LIQ	Ja1	Ja1

25.012

BERYLLIUM OXIDE

BeO

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	25.567	13.770	13.769	−608.354	0.000	−612.459	−608.354	−579.063	101.449
	300.00	25.743	13.928	13.770	−608.307	0.047	−612.485	−608.364	−578.881	100.792
	400.00	33.727	22.503	14.885	−605.307	3.047	−614.308	−608.689	−568.992	74.303
	500.00	38.935	30.630	17.232	−601.655	6.699	−616.970	−608.672	−559.065	58.405
	600.00	42.397	38.055	20.094	−597.577	10.777	−620.410	−608.444	−549.162	47.809
	700.00	44.836	44.783	23.148	−593.209	15.145	−624.558	−608.092	−539.308	40.244
	800.00	46.656	50.894	26.240	−588.631	19.723	−629.346	−607.673	−529.510	34.573
	900.00	48.084	56.475	29.294	−583.891	24.463	−634.719	−607.217	−519.767	30.166
	1000.00	49.252	61.604	32.272	−579.023	29.331	−640.626	−606.753	−510.075	26.644
	1100.00	50.241	66.345	35.157	−574.047	34.307	−647.027	−606.310	−500.429	23.763
	1200.00	51.105	70.755	37.942	−568.978	39.376	−653.884	−605.897	−490.822	21.365
	1300.00	51.875	74.876	40.626	−563.829	44.525	−661.168	−605.518	−481.248	19.337
	1400.00	52.576	78.747	43.212	−558.606	49.748	−668.851	−605.181	−471.701	17.599
	1500.00	53.225	82.396	45.704	−553.315	55.039	−676.910	−604.891	−462.178	16.094
	1600.00	53.831	85.851	48.106	−547.962	60.392	−685.324	−612.375	−452.471	14.772
	1700.00	54.405	89.132	50.424	−542.550	65.804	−694.074	−611.707	−442.497	13.596
	1800.00	54.951	92.257	52.662	−537.082	71.272	−703.145	−611.016	−432.564	12.553
	1900.00	55.476	95.242	54.825	−531.561	76.793	−712.521	−610.304	−422.669	11.620
	2000.00	55.982	98.101	56.918	−525.988	82.366	−722.189	−609.574	−412.812	10.782
	2100.00	56.473	100.844	58.945	−520.365	87.989	−732.138	−608.826	−402.993	10.024
	2200.00	56.950	103.482	60.909	−514.694	93.660	−742.355	−608.063	−393.209	9.336
	2300.00	57.415	106.024	62.816	−508.975	99.379	−752.831	−607.284	−383.460	8.709
	2373.00	57.748	107.823	64.173	−504.772	103.582	−760.636	−606.707	−376.365	8.285
			2.821		6.694					
SOL−B	2373.00	57.759	110.644	64.173	−498.078	110.276	−760.636	−600.013	−376.365	8.285
	2400.00	57.883	111.298	64.699	−496.517	111.837	−763.633	−599.798	−373.822	8.136
	2500.00	58.339	113.671	66.611	−490.705	117.649	−774.882	−598.991	−364.423	7.614
	2600.00	58.789	115.967	68.466	−484.849	123.505	−786.364	−598.171	−355.056	7.133
	2700.00	59.234	118.194	70.266	−478.948	129.406	−798.073	−597.337	−345.721	6.688
	2800.00	59.675	120.357	72.017	−473.002	135.352	−810.001	−894.075	−324.697	6.057
	2821.20	59.768	120.807	72.382	−471.736	136.618	−812.557	−893.671	−320.387	5.932
			28.022		79.057					
LIQ	2821.20	79.496	148.830	72.382	−392.679	215.675	−812.557	−814.614	−320.387	5.932
	2900.00	79.496	151.020	74.489	−386.415	221.939	−824.372	−811.560	−306.625	5.523
	3000.00	79.496	153.715	77.085	−378.465	229.889	−839.609	−807.696	−289.280	5.037
	3100.00	79.496	156.321	79.599	−370.516	237.838	−855.112	−803.846	−272.063	4.584
	3200.00	79.496	158.845	82.037	−362.566	245.788	−870.871	−800.011	−254.969	4.162
	3300.00	79.496	161.291	84.401	−354.617	253.737	−886.878	−796.190	−237.996	3.767
	3400.00	79.496	163.665	86.698	−346.667	261.687	−903.127	−792.383	−221.138	3.397
	3500.00	79.496	165.969	88.930	−338.717	269.637	−919.609	−788.592	−204.392	3.050

References

Phase	H / S	C_p	Remarks
SOL−A	Ja1	Ja1	Ku1
SOL−B	Ja1	Ja1	
LIQ	Ja1	Ja1	

MPT (SOL−A)= 2780.

$BeAl_2O_4$ BERYLLIUM DIALUMINIUM TETRAOXIDE 126.973

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	105.415	66.291	66.291	–2301.200	0.000	–2320.965	–2301.200	–2178.961	381.745
	300.00	105.975	66.945	66.293	–2301.004	0.196	–2321.088	–2301.234	–2178.202	379.259
	400.00	130.249	101.029	70.775	–2289.099	12.101	–2329.510	–2302.122	–2137.012	279.065
	500.00	145.355	131.845	79.966	–2275.261	25.939	–2341.183	–2301.789	–2095.755	218.942
	600.00	155.169	159.273	90.943	–2260.202	40.998	–2355.766	–2300.829	–2054.631	178.872
	700.00	161.971	183.732	102.484	–2244.326	56.874	–2372.939	–2299.586	–2013.694	150.264
	800.00	166.988	205.703	114.036	–2227.867	73.333	–2392.429	–2298.295	–1972.942	128.820
	900.00	170.911	225.606	125.345	–2210.965	90.235	–2414.010	–2297.161	–1932.343	112.150
	1000.00	174.160	243.786	136.293	–2193.707	107.493	–2437.493	–2317.391	–1890.339	98.741
	1100.00	177.005	260.521	146.836	–2176.146	125.054	–2462.719	–2315.977	–1847.702	87.740
	1200.00	179.633	276.037	156.964	–2158.313	142.887	–2489.557	–2314.471	–1805.197	78.578
	1300.00	182.181	290.516	166.686	–2140.222	160.978	–2517.892	–2312.876	–1762.822	70.831
	1400.00	184.756	304.110	176.022	–2121.876	179.324	–2547.630	–2311.186	–1720.572	64.195
	1500.00	187.446	316.948	184.993	–2103.267	197.933	–2578.689	–2309.388	–1678.448	58.449
	1600.00	190.326	329.136	193.624	–2084.380	216.820	–2610.998	–2315.189	–1636.247	53.418
	1700.00	193.461	340.767	201.940	–2065.193	236.007	–2644.498	–2312.633	–1593.890	48.974
	1800.00	196.911	351.921	209.964	–2045.677	255.523	–2679.136	–2309.818	–1551.691	45.029
	1900.00	200.733	362.668	217.720	–2025.799	275.401	–2714.869	–2306.708	–1509.656	41.503
	2000.00	204.979	373.071	225.229	–2005.517	295.683	–2751.658	–2303.263	–1467.793	38.335
	2100.00	209.700	383.184	232.511	–1984.787	316.413	–2789.473	–2299.436	–1426.112	35.473
	2146.00	212.045	387.753	235.790	–1975.087	326.113	–2807.205	–2297.534	–1407.003	34.247
			81.106		174.054					
LIQ	2146.00	234.304	468.859	235.790	–1801.033	500.167	–2807.205	–2123.480	–1407.003	34.247
	2200.00	234.304	474.682	241.582	–1788.381	512.819	–2832.681	–2119.999	–1389.018	32.979
	2300.00	234.304	485.097	251.945	–1764.950	536.250	–2880.674	–2113.604	–1355.935	30.794
	2400.00	234.304	495.069	261.869	–1741.520	559.680	–2929.686	–2107.275	–1323.128	28.797
	2500.00	234.304	504.634	271.390	–1718.090	583.110	–2979.674	–2101.010	–1290.585	26.965

References

Phase	H / S	C_p
SOL	Ja1	Ja1
LIQ	Ja1	e

330.895 BERYLLIUM HEXAALUMINIUM DECAOXIDE **BeAl6O10**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	265.171	175.561	175.561	−5624.133	0.000	−5676.476	−5624.133	−5317.258	931.561
	300.00	266.561	177.205	175.566	−5623.641	0.492	−5676.803	−5624.213	−5315.353	925.485
	400.00	324.268	262.545	186.808	−5593.838	30.295	−5698.856	−5626.146	−5211.993	680.617
	500.00	358.521	338.890	209.747	−5559.561	64.572	−5729.006	−5625.114	−5108.534	533.685
	600.00	380.574	406.337	237.006	−5522.535	101.598	−5766.337	−5622.684	−5005.431	435.761
	700.00	396.074	466.229	265.556	−5483.662	140.471	−5810.022	−5619.676	−4902.789	365.851
	800.00	407.819	519.915	294.054	−5443.444	180.689	−5859.376	−5616.645	−4800.586	313.446
	900.00	417.260	568.513	321.892	−5402.174	221.959	−5913.836	−5614.113	−4698.739	272.708
	1000.00	425.177	612.896	348.805	−5360.042	264.091	−5972.938	−5675.634	−4592.579	239.892
	1100.00	431.995	653.747	374.695	−5317.175	306.958	−6036.297	−5672.141	−4484.440	212.948
	1200.00	437.940	691.597	399.546	−5273.672	350.461	−6103.588	−5668.311	−4376.634	190.510
	1300.00	443.311	726.866	423.383	−5229.604	394.529	−6174.531	−5664.187	−4269.159	171.537
	1400.00	448.320	759.904	446.253	−5185.022	439.111	−6248.887	−5659.800	−4162.012	155.287
	1500.00	453.329	791.005	468.209	−5139.940	484.193	−6326.447	−5655.153	−4055.188	141.214
	1600.00	458.571	820.427	489.312	−5094.348	529.785	−6407.032	−5657.948	−3948.482	128.905
	1700.00	464.199	848.395	509.618	−5048.213	575.920	−6490.484	−5652.220	−3841.814	118.045
	1800.00	470.317	875.098	529.186	−5001.492	622.641	−6576.668	−5646.046	−3735.495	108.401
	1900.00	476.996	900.703	548.071	−4954.131	670.002	−6665.467	−5639.372	−3629.533	99.783
	2000.00	484.288	925.353	566.322	−4906.072	718.061	−6756.777	−5632.137	−3523.937	92.036
	2100.00	492.228	949.170	583.989	−4857.252	766.881	−6850.510	−5624.276	−3418.717	85.036
	2186.00	499.597	969.072	598.749	−4814.607	809.526	−6932.998	−5616.963	−3328.540	79.536
			183.744		401.664					
LIQ	2186.00	569.024	1152.816	598.749	−4412.943	1211.190	−6932.998	−5616.963	−3328.540	79.536
	2200.00	569.024	1156.448	602.286	−4404.977	1219.156	−6949.163	−5213.094	−3316.464	78.743
	2300.00	569.024	1181.742	626.934	−4348.074	1276.059	−7066.082	−5197.418	−3230.605	73.369
	2400.00	569.024	1205.960	650.559	−4291.172	1332.961	−7185.475	−5181.874	−3145.425	68.458
	2500.00	569.024	1229.188	673.243	−4234.269	1389.864	−7307.241	−5166.461	−3060.890	63.954

References

Phase	H / S	C_p
SOL	Ja1	Ja1
LIQ	Ja1	Ja1

$Be_3B_2O_6$ TRIBERYLLIUM DIBORATE 144.655

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[–]
SOL	298.15	140.517	100.416	100.416	–3104.361	0.000	–3134.300	–3104.361	–2938.886	514.881
	300.00	140.639	101.286	100.419	–3104.101	0.260	–3134.487	–3104.398	–2937.859	511.527
	400.00	171.485	145.317	106.211	–3088.719	15.642	–3146.845	–3106.175	–2882.049	376.357
	500.00	206.356	187.478	118.274	–3069.759	34.602	–3163.498	–3106.169	–2825.976	295.228
	600.00	232.418	227.534	133.182	–3047.750	56.611	–3184.270	–3104.409	–2770.078	241.157
	700.00	251.196	264.849	149.360	–3023.518	80.843	–3208.913	–3101.419	–2714.579	202.564
	800.00	264.930	299.334	165.980	–2997.678	106.683	–3237.145	–3097.627	–2659.567	173.652
	900.00	275.233	331.161	182.589	–2970.646	133.715	–3268.691	–3093.319	–2605.064	151.194
	1000.00	283.168	360.588	198.936	–2942.710	161.651	–3303.297	–3088.714	–2551.059	133.254
	1100.00	289.432	387.881	214.888	–2914.068	190.293	–3340.738	–3083.996	–2497.521	118.597
	1200.00	294.489	413.289	230.375	–2884.863	219.498	–3380.811	–3079.256	–2444.415	106.403
	1300.00	298.656	437.031	245.368	–2855.200	249.161	–3423.340	–3074.564	–2391.702	96.100
	1400.00	302.154	459.295	259.862	–2825.154	279.207	–3468.168	–3069.976	–2339.347	87.282
	1500.00	305.139	480.246	273.863	–2794.786	309.575	–3515.155	–3065.539	–2287.315	79.651
	1600.00	307.724	500.024	287.386	–2764.140	340.221	–3564.178	–3084.456	–2234.973	72.964
	1700.00	309.995	518.749	300.449	–2733.252	371.109	–3615.125	–3078.970	–2182.048	67.046
	1768.00	311.393	530.935	309.081	–2712.124	392.237	–3650.817	–3075.237	–2146.245	63.410

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1	Ja1	MPT= 1768.

26.020

BERYLLIUM MONOHYDROXIDE (GAS) **BeOH[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	38.437	209.602	209.602	−114.642	0.000	−177.135	−114.642	−124.257	21.769
	300.00	38.520	209.840	209.603	−114.571	0.071	−177.523	−114.655	−124.317	21.645
	400.00	42.436	221.487	211.164	−110.513	4.129	−199.108	−115.375	−127.429	16.640
	500.00	45.237	231.275	214.234	−106.121	8.521	−221.759	−116.079	−130.360	13.619
	600.00	47.300	239.713	217.793	−101.490	13.152	−245.318	−116.762	−133.152	11.592
	700.00	48.910	247.130	221.465	−96.676	17.966	−269.668	−117.434	−135.830	10.136
	800.00	50.230	253.750	225.094	−91.718	22.924	−294.717	−118.110	−138.412	9.037
	900.00	51.353	259.733	228.616	−86.637	28.005	−320.396	−118.801	−140.909	8.178
	1000.00	52.332	265.195	232.005	−81.452	33.190	−346.647	−119.522	−143.327	7.487
	1100.00	53.202	270.224	235.254	−76.174	38.468	−373.421	−120.297	−145.671	6.917
	1200.00	53.982	274.887	238.364	−70.814	43.828	−400.679	−121.131	−147.941	6.440
	1300.00	54.687	279.237	241.343	−65.380	49.262	−428.388	−122.028	−150.139	6.033
	1400.00	55.327	283.313	244.197	−59.879	54.763	−456.518	−122.996	−152.266	5.681
	1500.00	55.908	287.151	246.934	−54.317	60.325	−485.043	−124.038	−154.321	5.374
	1600.00	56.436	290.776	249.562	−48.699	65.943	−513.941	−132.882	−156.103	5.096
	1700.00	56.912	294.212	252.088	−43.031	71.611	−543.191	−133.605	−157.532	4.840
	1800.00	57.341	297.477	254.520	−37.318	77.324	−572.777	−134.336	−158.919	4.612
	1900.00	57.724	300.588	256.863	−31.565	83.077	−602.682	−135.079	−160.264	4.406
	2000.00	58.062	303.558	259.124	−25.775	88.867	−632.890	−135.837	−161.570	4.220

References

Phase	H / S	C_p
GAS	Ja1	Ja1

43.027

BERYLLIUM HYDROXIDE (ALPHA) **Be(OH)2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL−A	298.15	65.674	53.555	53.555	−902.907	0.000	−918.874	−902.907	−815.933	142.948
	300.00	66.079	53.963	53.556	−902.785	0.122	−918.974	−902.923	−815.393	141.973
	400.00	82.918	75.496	56.378	−895.260	7.647	−925.458	−903.114	−786.154	102.661
	500.00	92.948	95.165	62.204	−886.426	16.481	−934.009	−902.367	−756.986	79.082
	600.00	99.415	112.722	69.189	−876.787	26.120	−944.420	−901.086	−728.023	63.380
	700.00	103.979	128.407	76.549	−866.606	36.301	−956.491	−899.487	−699.302	52.183
	800.00	107.482	142.529	83.928	−856.026	46.881	−970.050	−897.688	−670.825	43.800
	900.00	110.376	155.360	91.163	−845.130	57.777	−984.954	−895.752	−642.583	37.295
	1000.00	112.919	167.123	98.179	−833.963	68.944	−1001.086	−893.724	−614.561	32.101

References

Phase	H / S	C_p	Remarks	
SOL−A	Ja1	Ja1	Ja1	NDPT= 354.

Be(OH)2[g] BERYLLIUM HYDROXIDE (GAS) 43.027

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	63.419	233.953	233.953	−676.553	0.000	−746.306	−676.553	−643.365	112.715
	300.00	63.628	234.346	233.954	−676.435	0.118	−746.739	−676.574	−643.159	111.984
	400.00	72.738	253.997	236.572	−669.583	6.970	−771.182	−677.437	−631.878	82.515
	500.00	78.628	270.905	241.788	−661.995	14.558	−797.447	−677.936	−620.424	64.815
	600.00	82.727	285.622	247.895	−653.916	22.637	−825.290	−678.216	−608.893	53.009
	700.00	85.823	298.617	254.231	−645.482	31.071	−854.514	−678.364	−597.326	44.573
	800.00	88.314	310.244	260.518	−636.773	39.780	−884.968	−678.434	−585.743	38.245
	900.00	90.480	320.774	266.637	−627.830	48.723	−916.527	−678.453	−574.156	33.323
	1000.00	92.392	330.408	272.540	−618.685	57.868	−949.093	−678.447	−562.567	29.386
	1100.00	94.100	339.295	278.209	−609.359	67.194	−982.583	−678.447	−550.980	26.164
	1200.00	95.638	347.550	283.648	−599.871	76.682	−1016.930	−678.466	−539.391	23.479
	1300.00	97.031	355.261	288.863	−590.236	86.317	−1052.075	−678.515	−527.800	21.207
	1400.00	98.295	362.499	293.867	−580.469	96.084	−1087.967	−678.605	−516.203	19.260
	1500.00	99.443	369.320	298.672	−570.581	105.972	−1124.561	−678.746	−504.598	17.572
	1600.00	100.484	375.772	303.291	−560.584	115.969	−1161.819	−686.671	−492.782	16.088
	1700.00	101.424	381.892	307.736	−550.488	126.065	−1199.704	−686.458	−480.670	14.769
	1800.00	102.268	387.714	312.019	−540.302	136.251	−1238.187	−686.241	−468.571	13.598
	1900.00	103.021	393.264	316.150	−530.037	146.516	−1277.238	−686.028	−456.485	12.550
	2000.00	103.685	398.565	320.139	−519.701	156.852	−1316.832	−685.826	−444.409	11.607

References

Phase	H / S	C_p
GAS	Ja1	Ja1

Be(OH)2[B] BERYLLIUM HYDROXIDE (BETA) 43.027

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL−B	298.15	65.674	50.208	50.208	−905.836	0.000	−920.806	−905.836	−817.864	143.286
	300.00	66.079	50.615	50.209	−905.714	0.122	−920.899	−905.852	−817.318	142.308
	400.00	82.918	72.148	53.030	−898.189	7.647	−927.048	−906.043	−787.744	102.869
	500.00	92.948	91.818	58.857	−889.355	16.481	−935.264	−905.296	−758.241	79.213
	600.00	99.415	109.375	65.842	−879.716	26.120	−945.341	−904.015	−728.944	63.460
	700.00	103.979	125.060	73.201	−869.535	36.301	−957.077	−902.416	−699.888	52.226
	800.00	107.482	139.182	80.581	−858.955	46.881	−970.301	−900.617	−671.077	43.817
	900.00	110.376	152.013	87.816	−848.059	57.777	−984.870	−898.681	−642.499	37.290
	1000.00	112.919	163.776	94.832	−836.892	68.944	−1000.668	−896.653	−614.143	32.080

References

Phase	H / S	C_p	Remarks	
SOL−B	Ja1	Ja1	Ja1	NDPT= 366.

110.107 BERYLLIUM SILICATE (PHENACITE) **Be2SiO4**

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	93.474	64.434	64.434	−2145.555	0.000	−2164.766	−2145.555	−2031.197	355.857
	300.00	94.209	65.014	64.435	−2145.381	0.174	−2164.886	−2145.588	−2030.487	353.539
	400.00	121.767	96.361	68.522	−2134.420	11.135	−2172.964	−2146.369	−1991.955	260.123
	500.00	136.813	125.288	77.034	−2121.428	24.127	−2184.072	−2145.985	−1953.380	204.068
	600.00	146.527	151.147	87.272	−2107.230	38.325	−2197.918	−2145.022	−1914.943	166.711
	700.00	153.372	174.276	98.079	−2092.217	53.338	−2214.210	−2143.746	−1876.694	140.041
	800.00	158.374	195.100	108.927	−2076.617	68.938	−2232.697	−2142.309	−1838.641	120.051
	900.00	162.024	213.976	119.567	−2060.587	84.968	−2253.166	−2140.812	−1800.772	104.514
	1000.00	164.582	231.188	129.882	−2044.248	101.307	−2275.437	−2139.355	−1763.069	92.093
	1100.00	166.193	246.957	139.818	−2027.702	117.853	−2299.355	−2138.039	−1725.505	81.937
	1200.00	166.947	261.456	149.359	−2011.038	134.517	−2324.786	−2136.933	−1688.053	73.479
	1300.00	166.898	274.822	158.503	−1994.340	151.215	−2351.609	−2136.102	−1650.682	66.325
	1400.00	166.084	287.166	167.258	−1977.684	167.871	−2379.716	−2135.616	−1613.362	60.195
	1500.00	164.528	298.575	175.637	−1961.148	184.407	−2409.011	−2135.546	−1576.064	54.883
	1600.00	162.250	309.125	183.655	−1944.803	200.752	−2439.403	−2151.407	−1538.354	50.222
	1700.00	159.259	318.875	191.326	−1928.721	216.834	−2470.809	−2201.589	−1499.593	46.077
	1800.00	155.567	327.877	198.665	−1912.974	232.581	−2503.153	−2201.832	−1458.295	42.319
	1833.00	154.196	330.691	201.017	−1907.863	237.692	−2514.019	−2202.017	−1444.662	41.168

References

Phase	H / S	C_p	Remarks
SOL	S5	S5	Ja1 MPT= 1833.

BeS BERYLLIUM SULFIDE 41.078

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	34.067	37.028	37.028	−234.304	0.000	−245.344	−234.304	−232.972	40.816
	300.00	34.257	37.240	37.029	−234.241	0.063	−245.413	−234.313	−232.964	40.563
	400.00	42.561	48.325	38.484	−230.368	3.936	−249.698	−236.861	−232.366	30.344
	500.00	47.696	58.418	41.480	−225.835	8.469	−255.044	−238.335	−231.089	24.142
	600.00	51.023	67.428	45.068	−220.888	13.416	−261.345	−239.234	−229.543	19.984
	700.00	53.370	75.479	48.848	−215.662	18.642	−268.498	−239.707	−227.888	17.005
	800.00	55.167	82.727	52.637	−210.232	24.072	−276.414	−240.127	−226.172	14.767
	900.00	56.634	89.312	56.352	−204.640	29.664	−285.021	−293.322	−223.249	12.957
	1000.00	57.887	95.346	59.954	−198.912	35.392	−294.258	−292.104	−215.528	11.258
	1100.00	58.979	100.915	63.428	−193.068	41.236	−304.075	−290.880	−207.930	9.874
	1200.00	59.934	106.089	66.770	−187.121	47.183	−314.428	−289.662	−200.443	8.725
	1300.00	60.752	110.919	69.982	−181.086	53.218	−325.281	−288.460	−193.057	7.757
	1400.00	61.442	115.449	73.070	−174.973	59.331	−336.602	−287.287	−185.762	6.931
	1500.00	61.966	119.706	76.038	−168.802	65.502	−348.362	−286.159	−178.550	6.218
	1600.00	62.428	123.720	78.894	−162.582	71.722	−360.535	−292.810	−171.211	5.589
	1700.00	62.872	127.518	81.644	−156.317	77.987	−373.098	−291.316	−163.657	5.029
	1800.00	63.313	131.125	84.293	−150.008	84.296	−386.032	−289.803	−156.191	4.533
	1900.00	63.758	134.560	86.849	−143.654	90.650	−399.318	−288.270	−148.810	4.091
	2000.00	64.207	137.841	89.317	−137.256	97.048	−412.939	−286.718	−141.510	3.696
	2100.00	64.657	140.985	91.703	−130.813	103.491	−426.881	−285.145	−134.288	3.340
	2200.00	65.106	144.003	94.013	−124.325	109.979	−441.132	−283.553	−127.142	3.019
	2300.00	65.551	146.907	96.250	−117.792	116.512	−455.678	−281.940	−120.068	2.727
	2400.00	65.992	149.706	98.419	−111.215	123.089	−470.510	−280.308	−113.065	2.461
	2500.00	66.428	152.409	100.525	−104.594	129.710	−485.616	−278.657	−106.131	2.217
	2600.00	66.862	155.023	102.571	−97.929	136.375	−500.988	−276.987	−99.263	1.994
	2700.00	67.294	157.554	104.561	−91.221	143.083	−516.618	−275.299	−92.459	1.789
	2800.00	67.730	160.010	106.497	−84.470	149.834	−532.497	−571.176	−73.998	1.380
	2900.00	68.172	162.394	108.384	−77.675	156.629	−548.618	−568.391	−56.290	1.014
	3000.00	68.626	164.713	110.223	−70.835	163.469	−564.973	−565.569	−38.680	0.673

References

Phase	H / S	C_p
SOL	Ja1	Ja1

41.078

BERYLLIUM SULFIDE (GAS)

BeS[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	30.790	210.272	210.272	263.592	0.000	200.899	263.592	213.271	−37.364
	300.00	30.813	210.462	210.272	263.649	0.057	200.510	263.576	212.959	−37.080
	400.00	32.360	219.535	211.499	266.806	3.214	178.992	260.313	196.324	−25.637
	500.00	33.657	226.903	213.865	270.111	6.519	156.659	257.610	180.615	−18.869
	600.00	34.579	233.126	216.570	273.525	9.933	133.650	255.179	165.452	−14.404
	700.00	35.258	238.509	219.328	277.018	13.426	110.062	252.974	150.672	−11.243
	800.00	35.821	243.255	222.028	280.573	16.981	85.969	250.678	136.212	−8.894
	900.00	36.368	247.505	224.627	284.182	20.590	61.428	195.500	123.200	−7.150
	1000.00	36.981	251.368	227.111	287.849	24.257	36.481	194.657	115.211	−6.018
	1100.00	37.730	254.926	229.480	291.583	27.991	11.164	193.771	107.309	−5.096
	1200.00	38.681	258.248	231.740	295.402	31.810	−14.496	192.861	99.489	−4.331
	1300.00	39.892	261.390	233.901	299.328	35.736	−40.479	191.953	91.745	−3.686
	1400.00	41.421	264.400	235.973	303.391	39.799	−66.770	191.077	84.070	−3.137
	1500.00	43.129	267.315	237.965	307.616	44.024	−93.356	190.259	76.455	−2.662
	1600.00	45.017	270.158	239.889	312.022	48.430	−120.230	181.794	69.093	−2.256
	1700.00	47.018	272.947	241.752	316.623	53.031	−147.386	181.624	62.055	−1.907
	1800.00	49.050	275.692	243.561	321.427	57.835	−174.818	181.632	55.023	−1.597
	1900.00	51.030	278.397	245.324	326.431	62.839	−202.523	181.816	47.985	−1.319
	2000.00	52.887	281.062	247.044	331.628	68.036	−230.496	182.167	40.932	−1.069
	2100.00	54.567	283.684	248.727	337.003	73.411	−258.734	182.671	33.859	−0.842
	2200.00	56.029	286.257	250.374	342.535	78.943	−287.232	183.307	26.758	−0.635
	2300.00	57.248	288.776	251.989	348.201	84.609	−315.984	184.052	19.626	−0.446
	2400.00	58.213	291.233	253.574	353.976	90.384	−344.985	184.882	12.460	−0.271
	2500.00	58.924	293.625	255.128	359.835	96.243	−374.228	185.771	5.257	−0.110
	2600.00	59.392	295.946	256.654	365.752	102.160	−403.707	186.694	−1.982	0.040
	2700.00	59.638	298.193	258.151	371.706	108.114	−433.415	187.628	−9.256	0.179
	2800.00	59.687	300.363	259.620	377.673	114.081	−463.343	−109.032	−4.844	0.090
	2900.00	59.574	302.456	261.061	383.638	120.046	−493.485	−107.078	−1.158	0.021
	3000.00	59.337	304.472	262.475	389.584	125.992	−523.832	−105.150	2.462	−0.043

References

Phase	H / S	C_p
GAS	Ja1	Ja1

BeSO4 — BERYLLIUM SULFATE — 105.076

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol		]	[−]
SOL−A	298.15	86.008	77.969	77.969	−1200.808	0.000	−1224.054	−1200.808	−1089.353	190.850
	300.00	86.382	78.502	77.970	−1200.649	0.159	−1224.199	−1200.830	−1088.662	189.553
	400.00	103.049	105.773	81.576	−1191.129	9.679	−1233.438	−1203.673	−1051.061	137.254
	500.00	116.118	130.210	88.901	−1180.154	20.654	−1245.259	−1204.823	−1012.779	105.804
	600.00	127.770	152.425	97.664	−1167.952	32.856	−1259.407	−1204.785	−974.352	84.825
	700.00	138.755	172.952	106.971	−1154.621	46.187	−1275.688	−1203.663	−936.023	69.847
	800.00	149.382	192.177	116.432	−1140.212	60.596	−1293.954	−1201.779	−897.909	58.627
	863.00	155.966	203.747	122.386	−1130.593	70.215	−1306.427	−1200.277	−874.036	52.903
			1.290		1.113					
SOL−B	863.00	158.058	205.037	122.386	−1129.480	71.328	−1306.427	−1199.164	−874.036	52.903
	900.00	162.257	211.760	125.923	−1123.555	77.253	−1314.138	−1250.719	−858.973	49.853
	908.00	163.164	213.200	126.685	−1122.253	78.555	−1315.838	−1250.324	−855.492	49.214
			21.533		19.552					
SOL−C	908.00	163.189	234.733	126.685	−1102.701	98.107	−1315.838	−1230.772	−855.492	49.214
	1000.00	174.460	251.048	137.380	−1087.140	113.668	−1338.188	−1225.737	−817.708	42.713
	1100.00	183.141	268.107	148.495	−1069.234	131.574	−1364.152	−1219.471	−777.203	36.906
	1200.00	189.258	284.320	159.144	−1050.597	150.211	−1391.781	−1212.660	−737.294	32.094
	1300.00	193.570	299.649	169.368	−1031.443	169.365	−1420.987	−1205.505	−697.969	28.045
	1400.00	196.572	314.111	179.196	−1011.926	188.882	−1451.682	−1198.154	−659.202	24.595
	1500.00	198.603	327.747	188.649	−992.160	208.648	−1483.781	−1190.714	−620.965	21.624
	1600.00	199.897	340.610	197.748	−972.230	228.578	−1517.205	−1190.989	−583.024	19.034
	1700.00	200.622	352.753	206.513	−952.200	248.608	−1551.879	−1183.114	−545.268	16.754
	1800.00	200.902	364.230	214.959	−932.121	268.687	−1587.734	−1175.262	−507.974	14.741

References

Phase	H / S	C_p
SOL−A	Ja1	Ja1
SOL−B	Ja1	Ja1
SOL−C	Ja1	Ja1

BeSO4*2H2O — BERYLLIUM SULFATE DIHYDRATE — 141.106

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol		]	[−]
SOL	298.15	152.844	163.218	163.218	−1822.969	0.000	−1871.632	−1822.969	−1597.842	279.935
	300.00	153.344	164.165	163.221	−1822.686	0.283	−1871.935	−1823.028	−1596.445	277.966
	400.00	180.330	211.975	169.558	−1806.002	16.967	−1890.792	−1827.490	−1520.437	198.549
	500.00	207.317	255.114	182.415	−1786.620	36.349	−1914.176	−1829.137	−1443.461	150.797

References

Phase	H / S	C_p
SOL	Nb1	e

177.137

BERYLLIUM SULFATE TETRAHYDRATE **BeSO4*4H2O**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	216.441	233.049	233.049	−2423.791	0.000	−2493.274	−2423.791	−2080.395	364.477
	300.00	216.940	234.389	233.053	−2423.390	0.401	−2493.707	−2423.894	−2078.264	361.858
	400.00	243.927	300.495	241.884	−2400.347	23.444	−2520.545	−2430.779	−1962.213	256.239
	500.00	270.914	357.825	259.452	−2374.605	49.186	−2553.517	−2434.970	−1844.567	192.701

References

Phase	H / S	C_p	Remarks
SOL−A	Nb1	e	Tetragonal

256.860

BERYLLIUM TUNGSTATE **BeWO4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	96.915	88.366	88.366	−1513.353	0.000	−1539.699	−1513.353	−1404.818	246.118
	300.00	97.342	88.967	88.368	−1513.173	0.180	−1539.863	−1513.357	−1404.145	244.483
	400.00	113.841	119.482	92.417	−1502.527	10.826	−1550.320	−1512.957	−1367.770	178.612
	500.00	123.781	146.023	100.545	−1490.614	22.739	−1563.626	−1511.783	−1331.598	139.111
	600.00	131.139	169.266	110.102	−1477.854	35.499	−1579.414	−1510.169	−1295.707	112.801
	700.00	137.278	189.954	120.059	−1464.426	48.927	−1597.394	−1508.241	−1260.112	94.031
	800.00	142.768	208.648	129.982	−1450.420	62.933	−1617.339	−1506.043	−1224.812	79.972
	900.00	147.879	225.762	139.687	−1435.885	77.468	−1639.071	−1503.589	−1189.802	69.054
	1000.00	152.756	241.597	149.096	−1420.852	92.501	−1662.449	−1500.887	−1155.080	60.335
	1100.00	157.480	256.378	158.184	−1405.339	108.014	−1687.355	−1497.951	−1120.639	53.215
	1200.00	162.099	270.280	166.952	−1389.360	123.993	−1713.695	−1494.774	−1086.477	47.293
	1300.00	166.645	283.434	175.410	−1372.922	140.431	−1741.386	−1491.352	−1052.589	42.294
	1400.00	171.138	295.949	183.577	−1356.032	157.321	−1770.361	−1487.685	−1018.974	38.018
	1500.00	175.591	307.908	191.470	−1338.696	174.657	−1800.558	−1483.772	−985.630	34.323
	1600.00	180.014	319.382	199.108	−1320.915	192.438	−1831.926	−1487.339	−952.354	31.091
	1700.00	184.413	330.427	206.510	−1302.694	210.659	−1864.420	−1482.456	−919.065	28.239
	1800.00	188.795	341.092	213.692	−1284.033	229.320	−1897.999	−1477.249	−886.073	25.713
	1900.00	193.162	351.417	220.670	−1264.935	248.418	−1932.627	−1471.724	−853.380	23.461
	2000.00	197.518	361.435	227.459	−1245.401	267.952	−1968.272	−1465.882	−820.985	21.442

References

Phase	H / S	C_p
SOL	Ja1	Ja1

Bi BISMUTH 208.980

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	25.550	56.735	56.735	0.000	0.000	–16.916	0.000	0.000	0.000
	300.00	25.550	56.893	56.735	0.047	0.047	–17.021	0.000	0.000	0.000
	400.00	26.602	64.346	57.745	2.641	2.641	–23.098	0.000	0.000	0.000
	500.00	28.725	70.499	59.695	5.402	5.402	–29.848	0.000	0.000	0.000
	544.52	29.824	72.995	60.681	6.705	6.705	–33.042	0.000	0.000	0.000
			20.747		11.297					
LIQ	544.52	30.479	93.741	60.681	18.002	18.002	–33.042	0.000	0.000	0.000
	600.00	29.568	96.652	63.876	19.666	19.666	–38.325	0.000	0.000	0.000
	700.00	28.560	101.127	68.888	22.567	22.567	–48.221	0.000	0.000	0.000
	800.00	28.008	104.901	73.160	25.393	25.393	–58.528	0.000	0.000	0.000
	900.00	27.689	108.180	76.872	28.176	28.176	–69.185	0.000	0.000	0.000
	1000.00	27.483	111.086	80.151	30.934	30.934	–80.151	0.000	0.000	0.000
	1100.00	27.325	113.697	83.084	33.675	33.675	–91.393	0.000	0.000	0.000
	1200.00	27.173	116.069	85.736	36.400	36.400	–102.883	0.000	0.000	0.000
	1300.00	27.196	118.245	88.154	39.119	39.119	–114.600	0.000	0.000	0.000
	1400.00	27.196	120.261	90.376	41.839	41.839	–126.526	0.000	0.000	0.000
	1500.00	27.196	122.137	92.432	44.558	44.558	–138.647	0.000	0.000	0.000
	1600.00	27.196	123.892	94.344	47.278	47.278	–150.950	0.000	0.000	0.000
	1700.00	27.196	125.541	96.131	49.998	49.998	–163.422	0.000	0.000	0.000
	1800.00	27.196	127.096	97.808	52.717	52.717	–176.055	0.000	0.000	0.000
	1900.00	27.196	128.566	99.389	55.437	55.437	–188.839	0.000	0.000	0.000
	1934.00	27.196	129.048	99.906	56.362	56.362	–193.218	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks	
SOL	Hu1	Hu1		
LIQ	Hu1	Hu1	Hu1,e	BPT= 1934.GAS(Bi), L= 187.291 kJ / NBPT= 1837.GAS(Bi+Bi2)

208.980

BISMUTH (GAS)

Bi[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	20.786	187.009	187.009	209.618	0.000	153.861	209.618	170.777	−29.919
	300.00	20.786	187.137	187.009	209.656	0.038	153.515	209.609	170.536	−29.693
	400.00	20.786	193.117	187.824	211.735	2.117	134.488	209.094	157.586	−20.579
	500.00	20.786	197.755	189.364	213.814	4.196	114.936	208.412	144.784	−15.125
	600.00	20.786	201.545	191.088	215.892	6.274	94.965	196.226	133.291	−11.604
	700.00	20.786	204.749	192.817	217.971	8.353	74.646	195.404	122.868	−9.169
	800.00	20.786	207.525	194.486	220.050	10.432	54.030	194.657	112.557	−7.349
	900.00	20.786	209.973	196.073	222.128	12.510	33.152	193.952	102.337	−5.940
	1000.00	20.786	212.163	197.574	224.207	14.589	12.044	193.272	92.195	−4.816
	1100.00	20.786	214.144	198.992	226.285	16.667	−9.273	192.611	82.119	−3.900
	1200.00	20.786	215.953	200.331	228.364	18.746	−30.780	191.964	72.103	−3.139
	1300.00	20.790	217.617	201.598	230.443	20.825	−52.459	191.324	62.141	−2.497
	1400.00	20.795	219.158	202.798	232.522	22.904	−74.299	190.683	52.228	−1.949
	1500.00	20.804	220.593	203.937	234.602	24.984	−96.287	190.043	42.360	−1.475
	1600.00	20.819	221.936	205.020	236.683	27.065	−118.414	189.405	32.535	−1.062
	1700.00	20.840	223.199	206.053	238.766	29.148	−140.672	188.768	22.751	−0.699
	1800.00	20.870	224.391	207.039	240.851	31.233	−163.052	188.134	13.003	−0.377
	1900.00	20.910	225.520	207.982	242.940	33.322	−185.548	187.503	3.291	−0.090
	2000.00	20.962	226.594	208.886	245.034	35.416	−208.154	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1

Bi2[g] BISMUTH (GAS) 417.961

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	36.942	273.743	273.743	220.078	0.000	138.462	220.078	172.293	−30.185
	300.00	36.948	273.972	273.744	220.146	0.068	137.955	220.052	171.996	−29.947
	400.00	37.141	284.631	275.196	223.852	3.774	110.000	218.571	156.195	−20.397
	500.00	37.235	292.930	277.943	227.571	7.493	81.106	216.768	140.802	−14.709
	600.00	37.288	299.724	281.024	231.298	11.220	51.463	191.966	128.114	−11.153
	700.00	37.321	305.474	284.117	235.028	14.950	21.196	189.894	117.639	−8.778
	800.00	37.345	310.460	287.105	238.762	18.684	−9.606	187.976	107.449	−7.016
	900.00	37.361	314.859	289.949	242.497	22.419	−40.876	186.144	97.494	−5.658
	1000.00	37.374	318.796	292.640	246.234	26.156	−72.562	184.365	87.740	−4.583
	1100.00	37.384	322.359	295.183	249.972	29.894	−104.623	182.622	78.162	−3.712
	1200.00	37.392	325.612	297.585	253.711	33.633	−137.024	180.911	68.741	−2.992
	1300.00	37.397	328.605	299.858	257.450	37.372	−169.737	179.211	59.463	−2.389
	1400.00	37.402	331.377	302.011	261.190	41.112	−202.738	177.512	50.315	−1.877
	1500.00	37.405	333.957	304.056	264.930	44.852	−236.006	175.813	41.289	−1.438
	1600.00	37.407	336.372	306.001	268.671	48.593	−269.524	174.115	32.376	−1.057
	1700.00	37.407	338.639	307.855	272.412	52.334	−303.275	172.416	23.569	−0.724
	1800.00	37.407	340.777	309.625	276.152	56.074	−337.247	170.718	14.863	−0.431
	1900.00	37.405	342.800	311.318	279.893	59.815	−371.427	169.019	6.250	−0.172
	2000.00	37.403	344.719	312.941	283.633	63.555	−405.804	−206.434	10.504	−0.274

References

Phase	H / S	C_p
GAS	Hu1	Hu1

BiAsO4 BISMUTH ARSENATE 347.900

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	121.123	168.071	168.071	−795.211	0.000	−845.321	−795.211	−695.431	121.837
	300.00	121.426	168.821	168.074	−794.987	0.224	−845.633	−795.188	−694.812	120.977
	400.00	133.385	205.559	173.002	−782.188	13.023	−864.412	−793.431	−661.594	86.395
	500.00	140.963	236.184	182.661	−768.449	26.762	−886.542	−791.139	−628.894	65.700
	600.00	146.817	262.419	193.820	−754.051	41.160	−911.503	−799.946	−595.524	51.845
	700.00	151.857	285.437	205.297	−739.113	56.098	−938.919	−797.096	−561.674	41.913
	758.00	154.567	297.633	211.900	−730.226	64.985	−955.831	−795.286	−542.240	37.366

References

Phase	H / S	C_p
SOL	G1	G1

288.884

BISMUTH MONOBROMIDE (GAS) **BiBr**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	36.839	267.467	267.467	53.409	0.000	−26.336	53.409	13.270	−2.325
	300.00	36.856	267.695	267.468	53.477	0.068	−26.831	53.360	13.021	−2.267
	400.00	37.510	278.399	268.923	57.200	3.791	−54.160	37.248	2.846	−0.372
	500.00	37.857	286.810	271.689	60.969	7.560	−82.436	36.410	−5.661	0.591
	600.00	38.084	293.733	274.803	64.767	11.358	−111.473	24.085	−12.830	1.117
	700.00	38.254	299.617	277.938	68.584	15.175	−141.148	23.133	−18.905	1.411
	800.00	38.393	304.734	280.975	72.417	19.008	−171.371	22.266	−24.851	1.623
	900.00	38.516	309.264	283.871	76.262	22.853	−202.075	21.449	−30.691	1.781
	1000.00	38.627	313.327	286.617	80.119	26.710	−233.208	20.666	−36.442	1.904
	1100.00	38.731	317.014	289.215	83.987	30.578	−264.728	19.907	−42.116	2.000
	1200.00	38.830	320.388	291.674	87.865	34.456	−296.600	19.170	−47.722	2.077
	1300.00	38.926	323.500	294.004	91.753	38.344	−328.797	18.446	−53.267	2.140
	1400.00	39.019	326.388	296.216	95.650	42.241	−361.293	17.728	−58.756	2.192
	1500.00	39.110	329.083	298.318	99.557	46.148	−394.068	17.016	−64.194	2.235
	1600.00	39.200	331.610	300.321	103.472	50.063	−427.104	16.311	−69.585	2.272
	1700.00	39.289	333.989	302.232	107.397	53.988	−460.385	15.612	−74.933	2.302
	1800.00	39.377	336.238	304.059	111.330	57.921	−493.898	14.919	−80.239	2.328
	1900.00	39.465	338.369	305.809	115.272	61.863	−527.629	14.232	−85.506	2.351
	2000.00	39.551	340.395	307.488	119.223	65.814	−561.568	−173.325	−84.350	2.203

References

Phase	H / S	C_p
GAS	Tk1	e

BiBr3 BISMUTH BROMIDE 448.692

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	100.826	195.393	195.393	−276.144	0.000	−334.400	−276.144	−249.413	43.696
	300.00	100.930	196.017	195.395	−275.957	0.187	−334.762	−276.215	−249.247	43.398
	400.00	106.556	225.823	199.421	−265.583	10.561	−355.912	−320.157	−231.090	30.177
	431.00	108.300	233.841	201.611	−262.253	13.891	−363.038	−319.371	−224.216	27.174
			7.717		3.326					
SOL−B	431.00	87.864	241.558	201.611	−258.927	17.217	−363.038	−316.045	−224.216	27.174
	491.70	87.864	253.135	207.273	−253.594	22.550	−378.060	−315.768	−211.303	22.447
			41.908		20.606					
LIQ	491.70	144.613	295.043	207.273	−232.988	43.156	−378.060	−295.162	−211.303	22.447
	500.00	144.248	297.460	208.750	−231.789	44.355	−380.519	−294.662	−209.892	21.927
	600.00	139.844	323.370	225.771	−217.584	58.560	−411.606	−300.299	−192.328	16.744
	700.00	135.441	344.597	241.277	−203.820	72.324	−445.038	−295.039	−174.754	13.040
	800.00	131.038	362.395	255.335	−190.496	85.648	−480.412	−290.162	−157.908	10.310

References

Phase	H / S	C_p
SOL−A	Pa2	Pa2
SOL−B	Pa2	Pa2
LIQ	Pa2	Pa2

BiBr3[g] BISMUTH BROMIDE (GAS) 448.692

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	81.220	384.410	384.410	−156.900	0.000	−271.512	−156.900	−186.524	32.678
	300.00	81.244	384.912	384.411	−156.750	0.150	−272.223	−157.007	−186.708	32.509
	400.00	82.050	408.413	387.610	−148.579	8.321	−311.944	−203.153	−187.121	24.436
	500.00	82.421	426.766	393.673	−140.353	16.547	−353.736	−203.227	−183.110	19.129
	600.00	82.636	441.814	400.480	−132.100	24.800	−397.188	−214.815	−177.910	15.488
	700.00	82.774	454.563	407.318	−123.829	33.071	−442.023	−215.048	−171.739	12.815
	800.00	82.866	465.622	413.930	−115.546	41.354	−488.044	−215.213	−165.540	10.809
	900.00	82.926	475.386	420.227	−107.257	49.643	−535.104	−215.342	−159.323	9.247
	1000.00	82.964	484.126	426.188	−98.962	57.938	−583.088	−215.454	−153.093	7.997
	1100.00	82.988	492.034	431.820	−90.664	66.236	−631.902	−215.556	−146.852	6.973
	1200.00	83.004	499.256	437.143	−82.365	74.535	−681.472	−215.651	−140.602	6.120
	1300.00	83.018	505.900	442.180	−74.063	82.837	−731.734	−215.748	−134.344	5.398
	1400.00	83.035	512.053	446.954	−65.761	91.139	−782.635	−215.852	−128.078	4.779
	1500.00	83.061	517.783	451.487	−57.456	99.444	−834.130	−215.962	−121.805	4.242

References

Phase	H / S	C_p
GAS	Pa2	Pa2

244.433 BISMUTH MONOCHLORIDE (GAS) **BiCl[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	36.253	255.082	255.082	25.104	0.000	−50.949	25.104	−0.772	0.135
	300.00	36.271	255.307	255.083	25.171	0.067	−51.421	25.092	−0.933	0.162
	400.00	36.924	265.842	256.515	28.835	3.731	−77.502	24.429	−9.511	1.242
	500.00	37.271	274.122	259.238	32.546	7.442	−104.515	23.594	−17.904	1.870
	600.00	37.498	280.939	262.303	36.285	11.181	−132.278	11.251	−24.956	2.173
	700.00	37.668	286.732	265.390	40.044	14.940	−160.669	10.270	−30.911	2.307
	800.00	37.808	291.772	268.379	43.818	18.714	−189.599	9.366	−36.732	2.398
	900.00	37.930	296.232	271.231	47.605	22.501	−219.004	8.506	−42.442	2.463
	1000.00	38.041	300.234	273.935	51.403	26.299	−248.831	7.676	−48.058	2.510
	1100.00	38.145	303.865	276.493	55.213	30.109	−279.038	6.869	−53.592	2.545
	1200.00	38.244	307.188	278.914	59.032	33.928	−309.593	6.081	−59.054	2.571
	1300.00	38.340	310.253	281.209	62.861	37.757	−340.467	5.304	−64.450	2.590
	1400.00	38.433	313.098	283.386	66.700	41.596	−371.637	4.533	−69.787	2.604
	1500.00	38.524	315.752	285.456	70.548	45.444	−403.081	3.767	−75.069	2.614
	1600.00	38.614	318.242	287.428	74.405	49.301	−434.782	3.006	−80.300	2.622
	1700.00	38.703	320.585	289.311	78.271	53.167	−466.724	2.251	−85.483	2.627
	1800.00	38.791	322.800	291.110	82.146	57.042	−498.894	1.501	−90.623	2.630

References

Phase	H / S	C_p
GAS	Tk1	e

315.338 BISMUTH CHLORIDE **BiCl3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	100.429	176.983	176.983	−379.070	0.000	−431.838	−379.070	−315.139	55.211
	300.00	100.537	177.605	176.985	−378.884	0.186	−432.166	−379.026	−314.742	54.801
	400.00	106.391	207.329	180.998	−368.538	10.532	−451.469	−376.473	−293.691	38.352
	500.00	112.244	231.698	188.770	−357.606	21.464	−473.455	−373.659	−273.316	28.553
	506.70	112.636	233.195	189.348	−356.853	22.217	−475.013	−373.461	−271.973	28.037
			46.736		23.681					
LIQ	506.70	143.511	279.931	189.348	−333.172	45.898	−475.013	−349.780	−271.973	28.037
	600.00	143.511	304.186	205.372	−319.782	59.288	−502.293	−355.552	−256.977	22.372
	700.00	143.511	326.308	221.109	−305.431	73.639	−533.847	−349.617	−241.016	17.985
	800.00	143.511	345.471	235.484	−291.080	87.990	−567.457	−343.650	−225.909	14.750

References

Phase	H / S	C_p
SOL	Nb1	Pa2
LIQ	Pa2	Pa2

BiCl3[g] BISMUTH CHLORIDE (GAS) 315.338

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	79.569	357.423	357.423	−265.266	0.000	−371.832	−265.266	−255.133	44.698
	300.00	79.612	357.915	357.425	−265.119	0.147	−372.493	−265.260	−255.070	44.412
	400.00	81.117	381.055	360.569	−257.072	8.194	−409.494	−265.007	−251.716	32.871
	500.00	81.814	399.240	366.550	−248.921	16.345	−448.541	−264.974	−248.402	25.950
	600.00	82.192	414.193	373.281	−240.719	24.547	−489.235	−276.489	−243.918	21.235
	700.00	82.421	426.881	380.055	−232.488	32.778	−531.304	−276.674	−238.474	17.795
	800.00	82.569	437.897	386.612	−224.238	41.028	−574.555	−276.808	−233.008	15.214
	900.00	82.670	447.629	392.861	−215.975	49.291	−618.841	−276.918	−227.526	13.205
	1000.00	82.743	456.343	398.781	−207.705	57.561	−664.047	−277.017	−222.033	11.598

References

Phase	H / S	C_p
GAS	Pa2	Pa2,e

BiF[g] BISMUTH MONOFLUORIDE (GAS) 227.979

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	34.407	244.120	244.120	−29.384	0.000	−102.168	−29.384	−55.021	9.639
	300.00	34.444	244.333	244.121	−29.320	0.064	−102.620	−29.397	−55.180	9.608
	400.00	35.768	254.449	245.491	−25.801	3.583	−127.580	−30.077	−63.674	8.315
	500.00	36.426	262.508	248.116	−22.188	7.196	−153.442	−30.907	−71.981	7.520
	600.00	36.822	269.187	251.087	−18.524	10.860	−180.036	−43.244	−78.949	6.873
	700.00	37.093	274.885	254.090	−14.828	14.556	−207.247	−44.224	−84.822	6.329
	800.00	37.299	279.852	257.006	−11.108	18.276	−234.989	−45.133	−90.559	5.913
	900.00	37.466	284.255	259.794	−7.369	22.015	−263.199	−46.001	−96.184	5.582
	1000.00	37.610	288.210	262.441	−3.615	25.769	−291.825	−46.846	−101.715	5.313
	1100.00	37.738	291.801	264.949	0.152	29.536	−320.828	−47.672	−107.162	5.089
	1200.00	37.855	295.089	267.326	3.932	33.316	−350.175	−48.481	−112.534	4.898
	1300.00	37.965	298.124	269.580	7.723	37.107	−379.838	−49.283	−117.839	4.735
	1400.00	38.070	300.941	271.721	11.525	40.909	−409.793	−50.082	−123.083	4.592
	1500.00	38.170	303.571	273.757	15.337	44.721	−440.020	−50.878	−128.269	4.467
	1600.00	38.268	306.038	275.698	19.159	48.543	−470.501	−51.671	−133.403	4.355
	1700.00	38.363	308.361	277.552	22.990	52.374	−501.223	−52.460	−138.487	4.255
	1800.00	38.456	310.556	279.325	26.831	56.215	−532.169	−53.244	−143.525	4.165
	1900.00	38.548	312.638	281.024	30.681	60.065	−563.330	−54.025	−148.519	4.083
	2000.00	38.638	314.617	282.655	34.541	63.925	−594.693	−241.679	−147.084	3.841

References

Phase	H / S	C_p
GAS	Tk1	e

265.976

BISMUTH FLUORIDE **BiF3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	85.775	122.591	122.591	−909.183	0.000	−945.734	−909.183	−838.123	146.836
	300.00	86.042	123.123	122.593	−909.024	0.159	−945.961	−909.158	−837.682	145.853
	400.00	96.597	149.478	126.114	−899.838	9.345	−959.629	−907.386	−814.105	106.311
	500.00	103.102	171.765	133.075	−889.838	19.345	−975.720	−905.192	−791.033	82.639
	600.00	109.799	191.123	141.168	−879.210	29.973	−993.884	−914.038	−767.274	66.797
	700.00	120.378	208.770	149.578	−867.749	41.434	−1013.888	−910.803	−743.055	55.447
	800.00	138.333	225.916	158.048	−854.889	54.294	−1035.621	−906.178	−719.385	46.971
	900.00	167.081	243.746	166.568	−839.722	69.461	−1059.094	−899.266	−696.422	40.419
	922.00	175.190	247.878	168.458	−835.958	73.225	−1064.502	−897.322	−691.486	39.175
			23.280		21.464					
LIQ	922.00	184.514	271.157	168.458	−814.494	94.689	−1064.502	−875.858	−691.486	39.175
	1000.00	184.514	286.142	177.061	−800.102	109.081	−1086.244	−867.925	−676.215	35.322
	1100.00	184.514	303.728	187.790	−781.651	127.532	−1115.752	−857.773	−657.536	31.224

References

Phase	H / S	C_p
SOL	Pa2	Pa2
LIQ	Pa2	Pa2

265.976

BISMUTH FLUORIDE (GAS) **BiF3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	72.639	317.759	317.759	−707.933	0.000	−802.673	−707.933	−695.062	121.772
	300.00	72.763	318.208	317.760	−707.799	0.134	−803.261	−707.933	−694.982	121.007
	400.00	77.133	339.829	320.678	−700.273	7.660	−836.204	−707.821	−690.680	90.194
	500.00	79.181	357.285	326.311	−692.446	15.487	−871.089	−707.800	−686.402	71.708
	600.00	80.314	371.831	332.720	−684.466	23.467	−907.565	−719.294	−680.955	59.282
	700.00	81.015	384.268	339.217	−676.397	31.536	−945.385	−719.451	−674.551	50.336
	800.00	81.487	395.118	345.541	−668.271	39.662	−984.366	−719.560	−668.129	43.624
	900.00	81.825	404.737	351.594	−660.104	47.829	−1024.367	−719.648	−661.695	38.404
	1000.00	82.079	413.372	357.347	−651.909	56.024	−1065.280	−719.731	−655.252	34.227
	1100.00	82.280	421.204	362.802	−643.690	64.243	−1107.015	−719.813	−648.800	30.809
	1200.00	82.443	428.371	367.972	−635.454	72.479	−1149.499	−719.894	−642.340	27.960
	1300.00	82.580	434.975	372.875	−627.203	80.730	−1192.671	−719.982	−635.874	25.550
	1400.00	82.699	441.100	377.532	−618.939	88.994	−1236.478	−720.081	−629.401	23.483
	1500.00	82.803	446.809	381.962	−610.663	97.270	−1280.877	−720.191	−622.920	21.692

References

Phase	H / S	C_p
GAS	Pa2	Pa2

BiI BISMUTH MONOIODIDE 335.885

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	41.953	125.520	125.520	−54.559	0.000	−91.983	−54.559	−57.753	10.118
	300.00	42.049	125.780	125.521	−54.481	0.078	−92.215	−54.579	−57.773	10.059
	400.00	47.237	138.587	127.232	−50.017	4.542	−105.452	−63.527	−58.411	7.628
	500.00	52.426	149.685	130.635	−45.034	9.525	−119.876	−85.402	−55.017	5.748
	564.00	55.746	156.196	133.170	−41.572	12.987	−129.667	−96.331	−50.745	4.700
			2.314		1.305					
SOL−B	564.00	54.810	158.509	133.170	−40.267	14.292	−129.667	−95.026	−50.745	4.700
	600.00	54.810	161.901	134.793	−38.294	16.265	−135.435	−94.802	−47.925	4.172

References

Phase	H / S	C_p
SOL−A	P1/e	e
SOL−B	P1	e

BiI[g] BISMUTH MONOIODIDE (GAS) 335.885

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	37.132	275.417	275.417	74.555	0.000	−7.560	74.555	26.669	−4.672
	300.00	37.149	275.646	275.417	74.624	0.069	−8.070	74.526	26.372	−4.592
	400.00	37.802	286.435	276.884	78.375	3.820	−36.199	64.865	10.842	−1.416
	500.00	38.150	294.911	279.672	82.174	7.619	−65.281	41.806	−0.421	0.044
	600.00	38.377	301.887	282.810	86.001	11.446	−95.131	29.493	−7.622	0.664
	700.00	38.547	307.816	285.969	89.848	15.293	−125.624	28.557	−13.732	1.025
	800.00	38.686	312.973	289.030	93.710	19.155	−156.669	27.707	−19.715	1.287
	900.00	38.808	317.537	291.948	97.585	23.030	−188.199	26.908	−25.594	1.485
	1000.00	38.920	321.631	294.715	101.471	26.916	−220.160	26.143	−31.386	1.639
	1100.00	39.024	325.346	297.334	105.368	30.813	−252.512	25.403	−37.103	1.762
	1200.00	39.123	328.746	299.812	109.276	34.721	−285.219	24.684	−42.754	1.861
	1300.00	39.218	331.881	302.160	113.193	38.638	−318.253	23.978	−48.345	1.943
	1400.00	39.312	334.791	304.388	117.119	42.564	−351.588	23.278	−53.882	2.010
	1500.00	39.403	337.506	306.506	121.055	46.500	−385.204	22.584	−59.369	2.067
	1600.00	39.493	340.052	308.524	125.000	50.445	−419.083	21.896	−64.810	2.116
	1700.00	39.582	342.449	310.450	128.954	54.399	−453.210	21.214	−70.208	2.157
	1800.00	39.670	344.714	312.291	132.916	58.361	−487.569	20.538	−75.567	2.193
	1900.00	39.757	346.861	314.054	136.888	62.333	−522.148	19.868	−80.888	2.224
	2000.00	39.844	348.903	315.746	140.868	66.313	−556.937	−167.673	−79.785	2.084

References

Phase	H / S	C_p
GAS	Tk1	e

589.694

BISMUTH IODIDE

BiI3

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	105.855	224.681	224.681	−150.624	0.000	−217.613	−150.624	−148.755	26.061
	300.00	105.657	225.335	224.683	−150.428	0.196	−218.029	−150.627	−148.744	25.899
	400.00	102.474	255.005	228.751	−140.122	10.502	−242.124	−175.372	−147.198	19.222
	500.00	106.836	278.259	236.397	−129.693	20.931	−268.823	−239.994	−133.939	13.993
	600.00	114.168	298.357	245.081	−118.659	31.965	−297.673	−248.851	−111.796	9.733
	681.80	121.243	313.383	252.385	−109.035	41.589	−322.700	−246.223	−93.275	7.146
			57.378		39.120					
LIQ	681.80	150.624	370.761	252.385	−69.915	80.709	−322.700	−207.103	−93.275	7.146
	700.00	150.624	374.729	255.514	−67.174	83.450	−329.484	−205.912	−90.252	6.735
	800.00	150.624	394.842	271.701	−52.111	98.513	−367.985	−199.333	−74.178	4.843
	900.00	150.624	412.583	286.388	−37.049	113.575	−408.373	−192.725	−58.930	3.420

References

Phase	H	S	C_p
SOL	Pa2		Pa2
LIQ	Pa2		Pa2

589.694

BISMUTH IODIDE (GAS)

BiI3[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	82.088	408.384	408.384	−16.318	0.000	−138.078	−16.318	−69.221	12.127
	300.00	82.101	408.892	408.386	−16.166	0.152	−138.834	−16.365	−69.549	12.110
	400.00	82.555	432.583	411.613	−7.930	8.388	−180.963	−43.180	−86.037	11.235
	500.00	82.764	451.029	417.719	0.337	16.655	−225.178	−109.964	−90.294	9.433
	600.00	82.875	466.130	424.567	8.620	24.938	−271.058	−121.573	−85.182	7.416
	700.00	82.941	478.910	431.441	16.911	33.229	−318.327	−121.827	−79.095	5.902
	800.00	82.983	489.989	438.082	25.207	41.525	−366.784	−122.015	−72.977	4.765
	900.00	83.011	499.764	444.403	33.507	49.825	−416.281	−122.169	−66.838	3.879
	1000.00	83.029	508.511	450.385	41.809	58.127	−466.703	−122.306	−60.683	3.170
	1100.00	83.042	516.426	456.034	50.113	66.431	−517.956	−122.435	−54.514	2.589
	1200.00	83.051	523.652	461.372	58.417	74.735	−569.965	−122.557	−48.334	2.104
	1300.00	83.058	530.300	466.422	66.723	83.041	−622.667	−122.682	−42.144	1.693
	1400.00	83.062	536.455	471.207	75.029	91.347	−676.008	−122.817	−35.943	1.341
	1500.00	83.065	542.186	475.750	83.335	99.653	−729.944	−122.960	−29.733	1.035

References

Phase	H	S	C_p
GAS	Pa2		Pa2

BiK3 BISMUTH 3–POTASSIUM 326.275

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[–]
SOL–A	298.15	92.047	193.422	193.422	–173.218	0.000	–230.887	–173.218	–156.127	27.353
	300.00	92.130	193.992	193.424	–173.048	0.170	–231.245	–173.258	–156.021	27.166
	400.00	96.637	221.113	197.091	–163.609	9.609	–252.055	–182.866	–148.561	19.400
	500.00	101.144	243.161	204.166	–153.720	19.498	–275.301	–185.062	–139.721	14.597
	553.00	103.533	253.470	208.403	–148.296	24.922	–288.465	–197.350	–134.687	12.722
			0.000		0.000					
SOL–B	553.00	103.533	253.470	208.403	–148.296	24.922	–288.465	–197.350	–134.687	12.722
	600.00	105.651	262.000	212.271	–143.380	29.838	–300.581	–198.106	–129.329	11.259
	700.00	110.158	278.625	220.585	–132.590	40.628	–327.628	–199.207	–117.771	8.788
	800.00	114.665	293.629	228.792	–121.349	51.869	–356.252	–199.724	–106.095	6.927
	900.00	119.172	307.395	236.771	–109.657	63.561	–386.312	–199.767	–94.385	5.478
	944.00	121.155	313.130	240.197	–104.370	68.848	–399.964	–199.659	–89.235	4.938

References

Phase	H / S	C_p	Remarks	
SOL–A	Tk1	e	Hu1	TPT= 553.
SOL–B	u	e	Hu1	MPT= 944.

BiMn BISMUTH MANGANESE 263.918

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[–]
SOL	298.15	47.662	94.140	94.140	–20.999	0.000	–49.067	–20.999	–22.608	3.961
	300.00	47.719	94.435	94.141	–20.911	0.088	–49.241	–21.007	–22.618	3.938
	400.00	50.794	108.584	96.049	–15.985	5.014	–59.419	–21.404	–23.095	3.016
	500.00	53.869	120.249	99.755	–10.752	10.247	–70.876	–21.850	–23.468	2.452
	600.00	56.944	130.342	104.029	–5.211	15.788	–83.416	–33.678	–22.591	1.967
	700.00	60.019	139.351	108.443	0.637	21.636	–96.909	–34.006	–20.713	1.546
	800.00	63.095	147.566	112.827	6.793	27.792	–111.260	–34.087	–18.806	1.228
	870.00	65.247	152.948	115.840	11.285	32.284	–121.780	–34.014	–17.471	1.049

References

Phase	H / S	C_p	Remarks	
SOL	Nb1/e	e	M5	DPT= 870. (peritec.)

267.670

BISMUTH NICKEL

BiNi

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	51.762	88.282	88.282	−7.782	0.000	−34.103	−7.782	−8.281	1.451
	300.00	51.798	88.603	88.283	−7.686	0.096	−34.267	−7.782	−8.284	1.442
	400.00	53.723	103.768	90.338	−2.410	5.372	−43.917	−7.831	−8.448	1.103
	500.00	55.647	115.962	94.282	3.058	10.840	−54.923	−8.080	−8.579	0.896
	600.00	57.572	126.278	98.776	8.719	16.501	−67.048	−19.955	−7.479	0.651
	700.00	59.496	135.297	103.362	14.573	22.355	−80.135	−20.320	−5.357	0.400
	800.00	61.421	143.368	107.867	20.619	28.401	−94.076	−20.192	−3.226	0.211
	900.00	63.346	150.713	112.225	26.857	34.639	−108.785	−19.889	−1.122	0.065
	928.00	63.885	152.662	113.416	28.638	36.420	−113.032	−19.781	−0.539	0.030

References

Phase	H / S	C_p	Remarks	
SOL	P2/Ku1	e	Tk1	DPT= 928.

Bi2O3 — BISMUTH OXIDE — 465.959

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	113.513	151.499	151.499	−573.882	0.000	−619.051	−573.882	−493.473	86.454
	300.00	113.672	152.201	151.501	−573.672	0.210	−619.332	−573.848	−492.975	85.834
	400.00	119.801	185.837	156.045	−561.965	11.917	−636.300	−571.785	−466.320	60.895
	500.00	123.458	212.989	164.806	−549.791	24.091	−656.285	−569.721	−440.197	45.987
	600.00	126.143	235.745	174.784	−537.305	36.577	−678.752	−590.503	−412.162	35.882
	700.00	128.368	255.361	184.925	−524.577	49.305	−703.330	−588.459	−382.596	28.550
	800.00	130.349	272.634	194.831	−511.640	62.242	−729.747	−586.179	−353.340	23.071
	900.00	132.187	288.094	204.349	−498.512	75.370	−757.796	−583.726	−324.381	18.827
	1000.00	133.937	302.112	213.435	−485.205	88.677	−787.317	−581.128	−295.702	15.446
	1003.00	133.989	302.513	213.701	−484.803	89.079	−788.224	−581.048	−294.846	15.355
			31.453		31.547					
SOL−B	1003.00	138.490	333.966	213.701	−453.256	120.626	−788.224	−549.501	−294.846	15.355
	1098.00	138.490	346.499	224.657	−440.100	133.782	−820.555	−546.552	−270.862	12.886
			15.242		16.736					
LIQ	1098.00	179.912	361.741	224.657	−423.364	150.518	−820.555	−529.816	−270.862	12.886
	1100.00	179.912	362.068	224.906	−423.004	150.878	−821.279	−529.671	−270.390	12.840
	1200.00	179.912	377.723	236.998	−405.013	168.869	−858.280	−522.453	−247.138	10.758
	1300.00	179.912	392.124	248.385	−387.021	186.861	−896.782	−515.276	−224.487	9.020
	1400.00	179.912	405.456	259.134	−369.030	204.852	−936.669	−508.144	−202.386	7.551
	1500.00	179.912	417.869	269.307	−351.039	222.843	−977.843	−501.054	−180.794	6.296
	1600.00	179.912	429.480	278.959	−333.048	240.834	−1020.216	−494.002	−159.674	5.213
	1700.00	179.912	440.387	288.137	−315.057	258.825	−1063.715	−486.988	−138.993	4.271
	1800.00	179.912	450.671	296.884	−297.065	276.817	−1108.273	−480.010	−118.724	3.445

References

Phase	H / S	C_p
SOL−A	Nb1	Pa2
SOL−B	Pa2	Pa2
LIQ	Pa2	Pa2

BiOCl — BISMUTH CHLORIDE OXIDE — 260.432

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	74.038	120.499	120.499	−366.899	0.000	−402.826	−366.899	−322.067	56.425
	300.00	74.140	120.957	120.501	−366.762	0.137	−403.049	−366.868	−321.789	56.028
	400.00	79.705	143.048	123.475	−359.070	7.829	−416.289	−364.988	−307.036	40.095
	500.00	85.270	161.432	129.276	−350.821	16.078	−431.537	−362.815	−292.794	30.588
	600.00	90.835	177.470	135.998	−342.016	24.883	−448.498	−371.672	−277.862	24.190
	700.00	96.399	191.891	142.969	−332.654	34.245	−466.977	−368.677	−262.456	19.585

References

Phase	H / S	C_p
SOL	Nb1	e

514.159 BISMUTH SULFIDE **Bi2S3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	122.055	200.401	200.401	−143.101	0.000	−202.851	−143.101	−140.347	24.588
	300.00	122.131	201.156	200.403	−142.875	0.226	−203.222	−143.096	−140.330	24.434
	400.00	126.231	236.853	205.243	−130.457	12.644	−225.198	−149.608	−139.170	18.174
	500.00	130.332	265.461	214.517	−117.629	25.472	−250.359	−154.009	−136.121	14.220
	600.00	134.432	289.586	225.068	−104.391	38.710	−278.142	−180.027	−129.891	11.308
	700.00	138.532	310.616	235.818	−90.742	52.359	−308.174	−182.110	−121.359	9.056
	800.00	142.633	329.382	246.361	−76.684	66.417	−340.190	−183.783	−112.565	7.350
	900.00	146.733	346.419	256.546	−62.216	80.885	−373.993	−343.501	−100.118	5.811
	1000.00	150.833	362.091	266.327	−47.338	95.763	−409.428	−339.644	−73.278	3.828
	1036.00	152.309	367.451	269.749	−41.881	101.220	−422.561	−338.152	−63.715	3.213
			76.612		79.370					
LIQ	1036.00	209.200	444.063	269.749	37.489	180.590	−422.561	−258.782	−63.715	3.213
	1100.00	209.200	456.603	280.259	50.878	193.979	−451.386	−252.436	−51.857	2.462
	1200.00	209.200	474.806	295.724	71.798	214.899	−497.970	−242.511	−34.061	1.483

References

Phase	H / S	C_p
SOL	Nb1,Tk1	Tk1,e
LIQ	Pa3	Pa3

706.152 BISMUTH SULFATE **Bi2(SO4)3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	278.844	312.545	312.545	−2544.299	0.000	−2637.484	−2544.299	−2207.993	386.831
	300.00	279.156	314.271	312.550	−2543.783	0.516	−2638.064	−2544.330	−2205.906	384.082
	400.00	296.060	396.894	323.702	−2515.022	29.277	−2673.780	−2552.326	−2092.614	273.267
	500.00	312.963	464.774	345.317	−2484.571	59.728	−2716.958	−2557.458	−1977.147	206.551
	600.00	329.867	523.328	370.212	−2452.429	91.870	−2766.426	−2583.529	−1858.417	161.790
	700.00	346.770	575.446	395.873	−2418.598	125.701	−2821.410	−2584.957	−1737.430	129.649
	800.00	363.673	622.854	421.325	−2383.075	161.224	−2881.359	−2585.187	−1616.328	105.535
	900.00	380.577	666.665	446.180	−2345.863	198.436	−2945.861	−2742.594	−1491.805	86.582
	1000.00	397.480	707.637	470.298	−2306.960	237.339	−3014.597	−2735.484	−1353.197	70.684

References

Phase	H / S	C_p
SOL	Nb1/e	e

Bi2Se3 BISMUTH SELENIDE 654.841

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	124.271	239.743	239.743	−140.164	0.000	−211.643	−140.164	−140.014	24.530
	300.00	124.307	240.512	239.746	−139.934	0.230	−212.088	−140.170	−140.013	24.378
	400.00	126.231	276.536	244.644	−127.407	12.757	−238.022	−140.832	−139.883	18.267
	500.00	128.156	304.911	253.958	−114.688	25.476	−267.143	−160.066	−139.235	14.546
	600.00	130.081	328.447	264.467	−101.776	38.388	−298.844	−186.227	−132.432	11.529
	700.00	132.005	348.643	275.083	−88.672	51.492	−332.722	−189.468	−123.205	9.194
	800.00	133.930	366.396	285.409	−75.375	64.789	−368.491	−192.367	−113.537	7.413
	900.00	135.854	382.281	295.306	−61.886	78.278	−405.939	−194.988	−103.523	6.008
	995.00	137.683	396.004	304.274	−48.893	91.271	−442.917	−197.253	−93.751	4.922
			87.044		86.609					
LIQ	995.00	188.280	483.049	304.274	37.716	177.880	−442.917	−110.644	−93.751	4.922
	1000.00	188.280	483.992	305.171	38.658	178.822	−445.335	−110.505	−93.667	4.893
	1100.00	188.280	501.937	322.256	57.486	197.650	−494.645	−267.635	−77.256	3.669

References

Phase	H / S	C_p
SOL	Mi1	Mi1
LIQ	B3	Mi1

Bi2Te3 BISMUTH TELLURIDE 800.761

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	124.456	260.914	260.914	−77.404	0.000	−155.196	−77.404	−77.092	13.506
	300.00	124.558	261.684	260.917	−77.174	0.230	−155.679	−77.411	−77.090	13.423
	400.00	130.081	298.274	265.868	−64.442	12.962	−183.751	−77.922	−76.915	10.044
	500.00	135.603	327.894	275.401	−51.158	26.246	−215.104	−78.878	−76.564	7.999
	600.00	141.126	353.105	286.300	−37.321	40.083	−249.184	−102.952	−73.666	6.413
	700.00	146.649	375.275	297.458	−22.932	54.472	−285.625	−104.409	−68.668	5.124
	800.00	152.172	395.218	308.452	−7.991	69.413	−324.165	−158.692	−57.825	3.776
	850.00	154.934	404.526	313.831	−0.314	77.090	−344.161	−159.454	−51.497	3.165
	850.00	167.360	538.176	310.641	116.001	193.405	−341.448	−43.139	−48.785	2.998
	950.00	167.360	556.791	335.590	132.737	210.141	−396.214	−43.239	−49.443	2.719
	1000.00	167.360	565.375	346.866	141.105	218.509	−424.270	−43.272	−49.769	2.600

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	Mi1		
LIQ	Mi1	Mi1	Mi1	DEC., Bi2Te3(s) = 2 BiTe(g) + 0.5 Te2(g)

447.009

BISMUTH URANIUM

BiU

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	52.482	97.069	97.069	−117.001	0.000	−145.942	−117.001	−114.032	19.978
	300.00	52.509	97.394	97.070	−116.904	0.097	−146.122	−117.002	−114.014	19.852
	400.00	53.974	112.700	99.147	−111.580	5.421	−156.660	−117.140	−113.001	14.756
	500.00	55.438	124.901	103.118	−106.109	10.892	−168.560	−117.513	−111.929	11.693
	600.00	56.902	135.138	107.623	−100.492	16.509	−181.575	−129.494	−109.601	9.542
	700.00	58.367	144.020	112.202	−94.729	22.272	−195.542	−130.266	−106.226	7.927
	800.00	59.831	151.909	116.681	−88.819	28.182	−210.346	−131.167	−102.732	6.708
	900.00	61.296	159.041	120.998	−82.762	34.239	−225.899	−132.284	−99.113	5.752
	1000.00	62.760	165.575	125.133	−76.560	40.441	−242.134	−136.091	−95.191	4.972
	1100.00	64.224	171.625	129.088	−70.210	46.791	−258.998	−141.291	−90.837	4.313
	1200.00	65.689	177.276	132.871	−63.715	53.286	−276.446	−141.348	−86.246	3.754
	1300.00	67.153	182.592	136.493	−57.073	59.928	−294.442	−141.254	−81.657	3.281
	1400.00	68.618	187.622	139.967	−50.284	66.717	−312.955	−141.014	−77.081	2.876
	1500.00	70.082	192.406	143.305	−43.349	73.652	−331.958	−150.060	−71.921	2.505
	1600.00	71.546	196.976	146.517	−36.268	80.733	−351.429	−150.489	−66.697	2.177
	1700.00	73.011	201.357	149.615	−29.040	87.961	−371.347	−150.771	−61.450	1.888

References

Phase	H / S	C_p	Remarks	
SOL	Nb1/Ku1	e	Hu1	DPT= 1700. (peritec.)

655.990

2−BISMUTH URANIUM

Bi2U

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	79.442	151.879	151.879	−109.002	0.000	−154.285	−109.002	−105.459	18.476
	300.00	79.496	152.371	151.881	−108.855	0.147	−154.566	−109.001	−105.437	18.358
	400.00	82.425	175.641	155.034	−100.759	8.243	−171.016	−108.960	−104.259	13.615
	500.00	85.354	194.349	161.085	−92.370	16.632	−189.544	−109.175	−103.066	10.767
	600.00	88.282	210.169	167.980	−83.688	25.314	−209.790	−132.356	−99.491	8.661
	700.00	91.211	223.998	175.015	−74.714	34.288	−231.512	−132.818	−93.974	7.012
	800.00	94.140	236.369	181.924	−65.446	43.556	−254.541	−133.188	−88.399	5.772
	900.00	97.069	247.626	188.608	−55.886	53.116	−278.749	−133.583	−82.778	4.804
	1000.00	99.998	258.005	195.035	−46.032	62.970	−304.037	−136.498	−76.943	4.019
	1100.00	102.926	267.673	201.204	−35.886	73.116	−330.326	−140.641	−70.773	3.361
	1200.00	105.855	276.754	207.125	−25.447	83.555	−357.552	−139.480	−64.470	2.806
	1283.00	108.286	283.914	211.863	−16.560	92.442	−380.822	−138.285	−59.321	2.415

References

Phase	H / S	C_p	Remarks	
SOL	Nb1/Ku1	e	Hu1	DPT= 1283. (peritec.)

Bi4U3 — 4–BISMUTH 3–URANIUM — 1550.008

Phase	T [K]	C_p [J / (K mol)]	S [J / (K mol)]	−(G−H298)/T [J / (K mol)]	H [kJ / mol]	H−H298 [kJ / mol]	G [kJ / mol]	ΔH_f [kJ / mol]	ΔG_f [kJ / mol]	log K_f [−]
SOL	298.15	183.951	342.670	342.670	−384.999	0.000	−487.166	−384.999	−374.520	65.614
	300.00	184.054	343.808	342.673	−384.659	0.340	−487.801	−385.001	−374.455	65.198
	400.00	189.619	397.519	349.959	−365.975	19.024	−524.983	−385.296	−370.909	48.436
	500.00	195.184	440.429	363.901	−346.735	38.264	−566.949	−386.347	−367.211	38.362
	600.00	200.748	476.507	379.739	−326.938	58.061	−612.842	−433.610	−358.596	31.219
	700.00	206.313	507.870	395.851	−306.585	78.414	−662.094	−435.765	−345.923	25.813
	800.00	211.878	535.783	411.629	−285.676	99.323	−714.302	−438.115	−332.933	21.738
	900.00	217.442	561.060	426.849	−264.210	120.789	−769.163	−440.950	−319.621	18.550
	1000.00	223.007	584.258	441.446	−242.187	142.812	−826.445	−451.717	−305.465	15.956
	1100.00	228.572	605.774	455.418	−219.608	165.391	−885.959	−466.524	−290.083	13.775
	1200.00	234.137	625.901	468.795	−196.473	188.526	−947.553	−465.773	−274.072	11.930
	1300.00	239.701	644.861	481.616	−172.781	212.218	−1011.100	−464.445	−258.147	10.372
	1400.00	245.266	662.829	493.924	−148.532	236.467	−1076.493	−462.560	−242.345	9.042
	1423.00	246.546	666.836	496.686	−142.877	242.122	−1091.784	−488.124	−238.400	8.751

References

Phase	H / S	C_p	Remarks	
SOL	Nb1/Ku1	e	Hu1	DPT= 1423. (peritec.)

79.904

BROMINE (GAS) **Br**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	20.793	175.017	175.017	111.860	0.000	59.679	111.860	82.369	−14.431
	300.00	20.790	175.146	175.017	111.898	0.038	59.355	111.828	82.186	−14.310
	400.00	20.734	181.115	175.832	113.973	2.113	41.527	96.662	75.436	−9.851
	500.00	20.788	185.746	177.368	116.049	4.189	23.176	96.892	70.102	−7.324
	600.00	20.885	189.544	179.091	118.132	6.272	4.406	97.116	64.723	−5.635
	700.00	21.003	192.772	180.820	120.226	8.366	−14.714	97.343	59.307	−4.426
	800.00	21.132	195.585	182.494	122.333	10.473	−34.135	97.575	53.857	−3.517
	900.00	21.267	198.082	184.090	124.453	12.593	−53.821	97.817	48.378	−2.808
	1000.00	21.406	200.330	185.603	126.587	14.727	−73.743	98.067	42.871	−2.239
	1100.00	21.547	202.376	187.036	128.734	16.874	−93.880	98.328	37.339	−1.773
	1200.00	21.691	204.257	188.394	130.896	19.036	−114.213	98.601	31.783	−1.383
	1300.00	21.835	205.999	189.682	133.072	21.212	−134.727	98.884	26.203	−1.053
	1400.00	21.981	207.623	190.906	135.263	23.403	−155.409	99.179	20.602	−0.769
	1500.00	22.127	209.144	192.072	137.469	25.609	−176.248	99.486	14.978	−0.522
	1600.00	22.274	210.577	193.184	139.689	27.829	−197.235	99.805	9.334	−0.305
	1700.00	22.421	211.932	194.248	141.923	30.063	−218.361	100.136	3.670	−0.113
	1800.00	22.568	213.218	195.266	144.173	32.313	−239.619	100.479	−2.015	0.058
	1900.00	22.716	214.442	196.243	146.437	34.577	−261.002	100.834	−7.718	0.212
	2000.00	22.864	215.611	197.183	148.716	36.856	−282.505	101.201	−13.441	0.351
	2100.00	23.012	216.730	198.087	151.010	39.150	−304.123	101.581	−19.183	0.477
	2200.00	23.160	217.804	198.959	153.318	41.458	−325.850	101.973	−24.942	0.592
	2300.00	23.308	218.836	199.801	155.642	43.782	−347.682	102.377	−30.720	0.698
	2400.00	23.456	219.831	200.615	157.980	46.120	−369.616	102.794	−36.516	0.795
	2500.00	23.605	220.792	201.403	160.333	48.473	−391.647	103.224	−42.329	0.884

References

Phase	H / S	C_p
GAS	Ja2	Ja1

159.808

BROMINE **Br2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
LIQ	298.15	75.689	152.210	152.210	0.000	0.000	−45.381	0.000	0.000	0.000
	300.00	75.634	152.678	152.211	0.140	0.140	−45.663	0.000	0.000	0.000
	332.50	74.679	160.410	152.642	2.583	2.583	−50.754	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks	
LIQ	Co1,Ja2	Ja1	Ja2	BPT= 332.503, L= 29.563 kJ

Br2[g] BROMINE (GAS) 159.808

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	36.043	245.394	245.394	30.911	0.000	−42.253	30.911	3.128	−0.548
	300.00	36.062	245.617	245.395	30.978	0.067	−42.707	30.838	2.956	−0.515
	400.00	36.737	256.097	246.819	34.622	3.711	−67.817	0.000	0.000	0.000
	500.00	37.074	264.334	249.528	38.314	7.403	−93.853	0.000	0.000	0.000
	600.00	37.278	271.113	252.577	42.033	11.122	−120.635	0.000	0.000	0.000
	700.00	37.420	276.871	255.646	45.768	14.857	−148.042	0.000	0.000	0.000
	800.00	37.528	281.875	258.619	49.516	18.605	−175.984	0.000	0.000	0.000
	900.00	37.617	286.300	261.454	53.273	22.362	−204.397	0.000	0.000	0.000
	1000.00	37.694	290.268	264.140	57.039	26.128	−233.229	0.000	0.000	0.000
	1100.00	37.763	293.864	266.681	60.812	29.901	−262.438	0.000	0.000	0.000
	1200.00	37.826	297.152	269.085	64.591	33.680	−291.992	0.000	0.000	0.000
	1300.00	37.886	300.182	271.362	68.377	37.466	−321.860	0.000	0.000	0.000
	1400.00	37.943	302.992	273.523	72.168	41.257	−352.021	0.000	0.000	0.000
	1500.00	37.998	305.612	275.576	75.965	45.054	−382.452	0.000	0.000	0.000
	1600.00	38.052	308.066	277.530	79.768	48.857	−413.137	0.000	0.000	0.000
	1700.00	38.104	310.374	279.395	83.575	52.664	−444.061	0.000	0.000	0.000
	1800.00	38.155	312.554	281.177	87.388	56.477	−475.208	0.000	0.000	0.000
	1900.00	38.206	314.618	282.883	91.206	60.295	−506.567	0.000	0.000	0.000
	2000.00	38.255	316.579	284.520	95.030	64.119	−538.128	0.000	0.000	0.000
	2100.00	38.305	318.447	286.091	98.858	67.947	−569.880	0.000	0.000	0.000
	2200.00	38.354	320.230	287.603	102.690	71.779	−601.815	0.000	0.000	0.000
	2300.00	38.403	321.936	289.058	106.528	75.617	−633.923	0.000	0.000	0.000
	2400.00	38.451	323.571	290.463	110.371	79.460	−666.199	0.000	0.000	0.000
	2500.00	38.499	325.142	291.819	114.219	83.308	−698.636	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Ja2	Ja1

12.011 CARBON (GRAPHITE) **C**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	8.512	5.740	5.740	0.000	0.000	−1.712	0.000	0.000	0.000
	300.00	8.594	5.793	5.741	0.016	0.016	−1.722	0.000	0.000	0.000
	400.00	11.927	8.754	6.122	1.053	1.053	−2.449	0.000	0.000	0.000
	500.00	14.633	11.713	6.945	2.384	2.384	−3.473	0.000	0.000	0.000
	600.00	16.884	14.588	7.981	3.964	3.964	−4.789	0.000	0.000	0.000
	700.00	18.590	17.326	9.122	5.742	5.742	−6.386	0.000	0.000	0.000
	800.00	19.827	19.893	10.310	7.666	7.666	−8.248	0.000	0.000	0.000
	900.00	20.792	22.286	11.509	9.699	9.699	−10.358	0.000	0.000	0.000
	1000.00	21.566	24.518	12.700	11.818	11.818	−12.700	0.000	0.000	0.000
	1100.00	22.192	26.604	13.870	14.007	14.007	−15.257	0.000	0.000	0.000
	1200.00	22.702	28.558	15.013	16.253	16.253	−18.016	0.000	0.000	0.000
	1300.00	23.117	30.392	16.127	18.545	18.545	−20.965	0.000	0.000	0.000
	1400.00	23.453	32.118	17.208	20.874	20.874	−24.091	0.000	0.000	0.000
	1500.00	23.725	33.745	18.257	23.233	23.233	−27.385	0.000	0.000	0.000
	1600.00	23.946	35.284	19.273	25.617	25.617	−30.837	0.000	0.000	0.000
	1700.00	24.127	36.741	20.258	28.021	28.021	−34.439	0.000	0.000	0.000
	1800.00	24.278	38.125	21.213	30.441	30.441	−38.183	0.000	0.000	0.000
	1900.00	24.410	39.441	22.138	32.876	32.876	−42.061	0.000	0.000	0.000
	2000.00	24.533	40.696	23.034	35.323	35.323	−46.069	0.000	0.000	0.000
	2100.00	24.648	41.896	23.904	37.783	37.783	−50.199	0.000	0.000	0.000
	2200.00	24.745	43.045	24.748	40.252	40.252	−54.446	0.000	0.000	0.000
	2300.00	24.835	44.147	25.568	42.731	42.731	−58.806	0.000	0.000	0.000
	2400.00	24.919	45.206	26.364	45.219	45.219	−63.274	0.000	0.000	0.000
	2500.00	24.997	46.224	27.138	47.715	47.715	−67.846	0.000	0.000	0.000
	2600.00	25.071	47.206	27.891	50.218	50.218	−72.518	0.000	0.000	0.000
	2700.00	25.142	48.154	28.625	52.729	52.729	−77.286	0.000	0.000	0.000
	2800.00	25.211	49.069	29.338	55.247	55.247	−82.148	0.000	0.000	0.000
	2900.00	25.278	49.955	30.034	57.771	57.771	−87.099	0.000	0.000	0.000
	3000.00	25.344	50.813	30.713	60.302	60.302	−92.138	0.000	0.000	0.000
	3100.00	25.409	51.645	31.374	62.840	62.840	−97.261	0.000	0.000	0.000
	3200.00	25.473	52.453	32.021	65.384	65.384	−102.466	0.000	0.000	0.000
	3300.00	25.537	53.238	32.652	67.935	67.935	−107.751	0.000	0.000	0.000
	3400.00	25.601	54.001	33.268	70.492	70.492	−113.113	0.000	0.000	0.000
	3500.00	25.665	54.744	33.872	73.055	73.055	−118.550	0.000	0.000	0.000
	3600.00	25.730	55.468	34.461	75.625	75.625	−124.061	0.000	0.000	0.000
	3700.00	25.795	56.174	35.039	78.201	78.201	−129.643	0.000	0.000	0.000
	3800.00	25.861	56.863	35.604	80.784	80.784	−135.295	0.000	0.000	0.000
	3900.00	25.928	57.535	36.158	83.373	83.373	−141.015	0.000	0.000	0.000
	4000.00	25.996	58.193	36.700	85.969	85.969	−146.802	0.000	0.000	0.000
	4100.00	26.066	58.836	37.233	88.572	88.572	−152.653	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks
SOL	Co1	Ja1	Ja1 NSPT= 4070. (approx.), GAS (C3, C2, C1, C4)

C[g] CARBON (GAS) 12.011

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	20.786	158.093	158.093	716.652	0.000	669.517	716.652	671.228	−117.596
	300.00	20.786	158.222	158.093	716.690	0.038	669.224	716.675	670.946	−116.822
	400.00	20.791	164.202	158.909	718.769	2.117	653.088	717.716	655.537	−85.604
	500.00	20.797	168.842	160.449	720.849	4.197	636.428	718.465	639.900	−66.850
	600.00	20.802	172.634	162.173	722.929	6.277	619.348	718.964	624.137	−54.336
	700.00	20.807	175.841	163.903	725.009	8.357	601.920	719.267	608.306	−45.392
	800.00	20.813	178.620	165.572	727.090	10.438	584.194	719.424	592.442	−38.682
	900.00	20.818	181.072	167.161	729.172	12.520	566.207	719.473	576.565	−33.463
	1000.00	20.824	183.266	168.664	731.254	14.602	547.988	719.435	560.688	−29.287
	1100.00	20.829	185.250	170.083	733.336	16.684	529.561	719.329	544.818	−25.871
	1200.00	20.835	187.063	171.423	735.420	18.768	510.944	719.167	528.960	−23.025
	1300.00	20.840	188.731	172.691	737.503	20.851	492.153	718.959	513.118	−20.617
	1400.00	20.846	190.276	173.893	739.588	22.936	473.202	718.714	497.293	−18.554
	1500.00	20.851	191.714	175.034	741.672	25.020	454.101	718.439	481.486	−16.767
	1600.00	20.856	193.060	176.119	743.758	27.106	434.862	718.141	465.699	−15.204
	1700.00	20.862	194.324	177.153	745.844	29.192	415.492	717.823	449.931	−13.825
	1800.00	20.867	195.517	178.140	747.930	31.278	396.000	717.489	434.182	−12.600
	1900.00	20.873	196.645	179.085	750.017	33.365	376.391	717.141	418.452	−11.504
	2000.00	20.878	197.716	179.990	752.105	35.453	356.672	716.782	402.741	−10.519
	2100.00	20.992	198.739	180.858	754.200	37.548	336.849	716.418	387.048	−9.627
	2200.00	21.063	199.717	181.694	756.303	39.651	316.926	716.051	371.373	−8.818
	2300.00	21.135	200.655	182.498	758.413	41.761	296.907	715.681	355.714	−8.079
	2400.00	21.206	201.556	183.273	760.530	43.878	276.797	715.311	340.071	−7.401
	2500.00	21.278	202.423	184.022	762.654	46.002	256.597	714.939	324.443	−6.779
	2600.00	21.349	203.259	184.746	764.786	48.134	236.313	714.567	308.831	−6.204
	2700.00	21.421	204.066	185.446	766.924	50.272	215.947	714.195	293.233	−5.673
	2800.00	21.492	204.846	186.125	769.070	52.418	195.501	713.823	277.648	−5.180
	2900.00	21.564	205.601	186.784	771.222	54.570	174.978	713.451	262.077	−4.721
	3000.00	21.635	206.334	187.424	773.382	56.730	154.381	713.080	246.519	−4.292
	3100.00	21.707	207.044	188.045	775.550	58.898	133.712	712.710	230.973	−3.892
	3200.00	21.779	207.735	188.650	777.724	61.072	112.973	712.340	215.439	−3.517
	3300.00	21.850	208.406	189.238	779.905	63.253	92.166	711.971	199.917	−3.164
	3400.00	21.922	209.059	189.812	782.094	65.442	71.292	711.602	184.405	−2.833
	3500.00	21.993	209.696	190.371	784.290	67.638	50.355	711.235	168.905	−2.521
	3600.00	22.065	210.316	190.916	786.493	69.841	29.354	710.868	153.415	−2.226
	3700.00	22.136	210.922	191.449	788.703	72.051	8.292	710.502	137.935	−1.947
	3800.00	22.208	211.513	191.969	790.920	74.268	−12.830	710.136	122.465	−1.683
	3900.00	22.279	212.091	192.478	793.144	76.492	−34.010	709.771	107.005	−1.433
	4000.00	22.351	212.656	192.975	795.376	78.724	−55.248	709.406	91.554	−1.196

References

Phase	H / S	C_p
GAS	Co1	Ja1

12.011 CARBON (DIAMOND) **C**[D]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	6.125	2.368	2.368	1.895	0.000	1.189	1.895	2.900	−0.508
	300.00	6.188	2.406	2.368	1.906	0.011	1.185	1.891	2.907	−0.506
	400.00	10.208	4.730	2.658	2.724	0.829	0.832	1.671	3.281	−0.428
	500.00	13.611	7.392	3.335	3.923	2.028	0.227	1.539	3.700	−0.387
	600.00	16.121	10.107	4.238	5.416	3.521	−0.648	1.452	4.141	−0.360
	700.00	18.004	12.740	5.266	7.126	5.231	−1.791	1.384	4.594	−0.343
	800.00	19.471	15.243	6.358	9.003	7.108	−3.192	1.337	5.056	−0.330
	900.00	20.656	17.607	7.478	11.011	9.116	−4.835	1.312	5.523	−0.321
	1000.00	21.642	19.836	8.603	13.128	11.233	−6.708	1.309	5.991	−0.313
	1100.00	22.481	21.939	9.721	15.335	13.440	−8.798	1.328	6.459	−0.307
	1200.00	23.209	23.927	10.823	17.620	15.725	−11.092	1.367	6.924	−0.301

References

Phase	H / S	C_p
SOL	Pa1	Pa1

C2[g] CARBON (GAS) 24.022

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	43.144	199.381	199.381	837.637	0.000	778.192	837.637	781.615	−136.936
	300.00	43.102	199.648	199.382	837.717	0.080	777.823	837.685	781.267	−136.031
	400.00	39.641	211.588	201.034	841.859	4.222	757.224	839.753	762.121	−99.523
	500.00	37.156	220.137	204.040	845.685	8.048	735.617	840.918	742.562	−77.575
	600.00	35.998	226.794	207.298	849.335	11.698	713.258	841.406	722.835	−62.928
	700.00	35.608	232.306	210.487	852.910	15.273	690.296	841.426	703.067	−52.463
	800.00	35.599	237.058	213.518	856.469	18.832	666.822	841.136	683.318	−44.616
	900.00	35.755	241.259	216.372	860.035	22.398	642.903	840.637	663.619	−38.515
	1000.00	35.972	245.037	219.052	863.622	25.985	618.585	839.985	643.984	−33.638
	1100.00	36.210	248.477	221.573	867.231	29.594	593.906	839.216	624.420	−29.651
	1200.00	36.466	251.638	223.949	870.864	33.227	568.899	838.358	604.931	−26.332
	1300.00	36.764	254.568	226.193	874.525	36.888	543.586	837.436	585.516	−23.526
	1400.00	37.025	257.302	228.318	878.215	40.578	517.991	836.467	566.173	−21.124
	1500.00	37.309	259.866	230.337	881.931	44.294	492.132	835.465	546.901	−19.045
	1600.00	37.603	262.283	232.259	885.677	48.040	466.023	834.443	527.697	−17.228
	1700.00	37.897	264.572	234.093	889.452	51.815	439.679	833.410	508.557	−15.626
	1800.00	38.186	266.746	235.847	893.256	55.619	413.112	832.373	489.478	−14.204
	1900.00	38.467	268.818	237.528	897.089	59.452	386.333	831.336	470.456	−12.934
	2000.00	38.739	270.799	239.143	900.949	63.312	359.352	830.302	451.489	−11.792
	2100.00	39.002	272.695	240.695	904.836	67.199	332.176	829.271	432.574	−10.760
	2200.00	39.256	274.515	242.192	908.749	71.112	304.815	828.244	413.708	−9.823
	2300.00	39.501	276.266	243.635	912.687	75.050	277.276	827.224	394.888	−8.968
	2400.00	39.738	277.952	245.030	916.649	79.012	249.564	826.210	376.113	−8.186
	2500.00	39.967	279.579	246.380	920.634	82.997	221.687	825.204	357.379	−7.467
	2600.00	40.189	281.151	247.687	924.642	87.005	193.650	824.205	338.686	−6.804
	2700.00	40.405	282.671	248.955	928.672	91.035	165.459	823.214	320.031	−6.191
	2800.00	40.616	284.145	250.185	932.723	95.086	137.118	822.229	301.413	−5.623
	2900.00	40.821	285.574	251.381	936.795	99.158	108.631	821.252	282.830	−5.094
	3000.00	41.022	286.961	252.544	940.887	103.250	80.004	820.282	264.280	−4.602
	3100.00	41.218	288.309	253.676	944.999	107.362	51.241	819.319	245.762	−4.141
	3200.00	41.410	289.621	254.779	949.130	111.493	22.344	818.362	227.276	−3.710
	3300.00	41.599	290.898	255.854	953.281	115.644	−6.682	817.412	208.819	−3.305
	3400.00	41.784	292.143	256.903	957.450	119.813	−35.835	816.467	190.391	−2.925
	3500.00	41.966	293.356	257.928	961.638	124.001	−65.110	815.528	171.991	−2.567
	3600.00	42.146	294.541	258.928	965.843	128.206	−94.505	814.594	153.617	−2.229
	3700.00	42.323	295.698	259.907	970.067	132.430	−124.017	813.665	135.270	−1.910
	3800.00	42.498	296.829	260.863	974.308	136.671	−153.644	812.741	116.947	−1.608
	3900.00	42.671	297.936	261.800	978.566	140.929	−183.382	811.820	98.649	−1.321
	4000.00	42.842	299.018	262.717	982.842	145.205	−213.230	810.903	80.374	−1.050

References

Phase	H / S	C_p
GAS	Ja1	Ja1

CBr[g] BROMOMETHYLIDYNE (GAS) 91.915

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	36.121	233.577	233.577	510.448	0.000	440.807	510.448	465.209	−81.503
	300.00	36.146	233.800	233.577	510.515	0.067	440.375	510.429	464.929	−80.951
	400.00	37.009	244.335	235.008	514.179	3.731	416.445	495.815	452.802	−59.130
	500.00	37.410	252.641	237.733	517.902	7.454	391.581	496.361	441.980	−46.173
	600.00	37.630	259.483	240.805	521.655	11.207	365.965	496.674	431.071	−37.528
	700.00	37.763	265.294	243.899	525.425	14.977	339.719	496.799	420.125	−31.350
	800.00	37.851	270.343	246.895	529.206	18.758	312.932	496.782	409.172	−26.716
	900.00	37.912	274.805	249.753	532.994	22.546	285.670	496.659	398.227	−23.112
	1000.00	37.956	278.802	252.462	536.788	26.340	257.986	496.450	387.300	−20.230
	1100.00	37.990	282.421	255.024	540.585	30.137	229.922	496.172	376.398	−17.874
	1200.00	38.016	285.728	257.446	544.385	33.937	201.512	495.837	365.524	−15.911
	1300.00	38.037	288.771	259.740	548.188	37.740	172.785	495.455	354.680	−14.251
	1400.00	38.054	291.591	261.916	551.993	41.545	143.766	495.035	343.867	−12.830
	1500.00	38.069	294.217	263.983	555.799	45.351	114.474	494.583	333.085	−11.599
	1600.00	38.081	296.674	265.950	559.606	49.158	84.928	494.106	322.333	−10.523
	1700.00	38.092	298.983	267.826	563.415	52.967	55.144	493.606	311.613	−9.575
	1800.00	38.102	301.161	269.618	567.225	56.777	25.136	493.089	300.922	−8.733
	1900.00	38.110	303.221	271.333	571.036	60.588	−5.085	492.556	290.261	−7.980
	2000.00	38.118	305.176	272.977	574.847	64.399	−35.505	492.009	279.628	−7.303

References

Phase	H / S	C_p
GAS	Ja1	Ja1

331.627 TETRABROMOMETHANE (GAS) **CBr4**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	91.181	358.105	358.105	50.208	0.000	−56.561	50.208	35.913	−6.292
	300.00	91.319	358.669	358.107	50.377	0.169	−57.224	50.081	35.825	−6.238
	400.00	97.087	385.804	361.767	59.823	9.615	−94.499	−10.474	43.583	−5.691
	500.00	100.472	407.864	368.850	69.715	19.507	−134.217	−9.297	56.961	−5.951
	600.00	102.549	426.381	376.937	79.874	29.666	−175.954	−8.155	70.105	−6.103
	700.00	103.899	442.297	385.164	90.201	39.993	−219.407	−7.077	83.062	−6.198
	800.00	104.820	456.234	393.195	100.640	50.432	−264.348	−6.058	95.869	−6.260
	900.00	105.473	468.620	400.900	111.156	60.948	−310.602	−5.089	108.551	−6.300
	1000.00	105.953	479.759	408.238	121.729	71.521	−358.030	−4.167	121.127	−6.327
	1100.00	106.314	489.875	415.207	132.343	82.135	−406.520	−3.288	133.614	−6.345
	1200.00	106.592	499.138	421.821	142.989	92.781	−455.977	−2.446	146.022	−6.356
	1300.00	106.810	507.679	428.101	153.659	103.451	−506.323	−1.639	158.362	−6.363
	1400.00	106.984	515.601	434.072	164.349	114.141	−557.492	−0.861	170.640	−6.367
	1500.00	107.124	522.987	439.756	175.055	124.847	−609.426	−0.109	182.864	−6.368
	1600.00	107.239	529.904	445.176	185.773	135.565	−662.074	0.621	195.038	−6.367
	1700.00	107.334	536.409	450.353	196.502	146.294	−715.393	1.330	207.167	−6.365
	1800.00	107.412	542.546	455.306	207.239	157.031	−769.343	2.021	219.255	−6.363
	1900.00	107.478	548.355	460.052	217.984	167.776	−823.891	2.695	231.305	−6.359
	2000.00	107.534	553.870	464.606	228.735	178.527	−879.005	3.352	243.320	−6.355

References

Phase	H / S	C_p
GAS	Ja1	Ja1

CCl[g] CHLOROMETHYLIDYNE (GAS) 47.464

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	32.258	224.497	224.497	502.080	0.000	435.146	502.080	470.119	–82.363
	300.00	32.278	224.697	224.498	502.140	0.060	434.731	502.092	469.920	–81.820
	400.00	33.582	234.160	225.779	505.432	3.352	411.768	502.614	459.110	–59.954
	500.00	34.647	241.775	228.241	508.847	6.767	387.959	502.912	448.196	–46.823
	600.00	35.398	248.162	231.043	512.351	10.271	363.454	503.019	437.239	–38.065
	700.00	35.935	253.661	233.891	515.919	13.839	338.356	502.970	426.278	–31.809
	800.00	36.331	258.487	236.670	519.533	17.453	312.744	502.808	415.332	–27.118
	900.00	36.633	262.784	239.337	523.182	21.102	286.677	502.561	404.412	–23.471
	1000.00	36.871	266.656	241.878	526.858	24.778	260.202	502.247	393.522	–20.556
	1100.00	37.064	270.180	244.294	530.555	28.475	233.357	501.878	382.667	–18.171
	1200.00	37.224	273.412	246.587	534.270	32.190	206.175	501.465	371.848	–16.186
	1300.00	37.360	276.397	248.767	537.999	35.919	178.683	501.017	361.065	–14.508
	1400.00	37.477	279.170	250.841	541.741	39.661	150.903	500.539	350.317	–13.070
	1500.00	37.580	281.759	252.817	545.494	43.414	122.855	500.038	339.604	–11.826
	1600.00	37.671	284.188	254.702	549.257	47.177	94.556	499.519	328.925	–10.738
	1700.00	37.754	286.474	256.505	553.028	50.948	66.022	498.985	318.279	–9.780
	1800.00	37.830	288.634	258.230	556.807	54.727	37.266	498.438	307.665	–8.928
	1900.00	37.900	290.681	259.885	560.594	58.514	8.299	497.881	297.082	–8.167
	2000.00	37.965	292.627	261.474	564.387	62.307	–20.867	497.315	286.528	–7.483
	2100.00	38.028	294.481	263.002	568.187	66.107	–50.223	496.739	276.003	–6.865
	2200.00	38.088	296.251	264.473	571.992	69.912	–79.760	496.155	265.505	–6.304
	2300.00	38.147	297.946	265.892	575.804	73.724	–109.471	495.564	255.035	–5.792
	2400.00	38.204	299.570	267.261	579.622	77.542	–139.347	494.965	244.590	–5.323
	2500.00	38.261	301.131	268.585	583.445	81.365	–169.383	494.360	234.170	–4.893
	2600.00	38.318	302.633	269.866	587.274	85.194	–199.572	493.748	223.774	–4.496
	2700.00	38.376	304.080	271.107	591.109	89.029	–229.908	493.130	213.402	–4.129
	2800.00	38.434	305.477	272.309	594.949	92.869	–260.386	492.506	203.053	–3.788
	2900.00	38.495	306.827	273.476	598.796	96.716	–291.001	491.876	192.727	–3.471
	3000.00	38.557	308.133	274.610	602.648	100.568	–321.750	491.241	182.422	–3.176

References

Phase	H / S	C_p
GAS	Ja1	Ja1

82.916 DICHLOROMETHYLENE (GAS) **CCl2**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	46.252	265.375	265.375	238.488	0.000	159.366	238.488	227.600	−39.875
	300.00	46.335	265.661	265.376	238.574	0.086	158.875	238.495	227.533	−39.617
	400.00	50.141	279.549	267.243	243.410	4.922	131.591	238.828	223.826	−29.229
	500.00	52.548	291.017	270.885	248.554	10.066	103.045	239.069	220.046	−22.988
	600.00	54.176	300.749	275.072	253.894	15.406	73.445	239.194	216.227	−18.824
	700.00	55.477	309.201	279.357	259.379	20.891	42.938	239.223	212.396	−15.849
	800.00	56.678	316.687	283.564	264.987	26.499	11.637	239.202	208.565	−13.618
	900.00	57.884	323.432	287.625	270.714	32.226	−20.375	239.172	204.737	−11.883
	1000.00	59.129	329.595	291.518	276.565	38.077	−53.030	239.161	200.912	−10.495
	1100.00	60.356	335.288	295.242	282.539	44.051	−86.278	239.193	197.086	−9.359
	1200.00	61.564	340.592	298.803	288.635	50.147	−120.075	239.280	193.254	−8.412
	1300.00	62.665	345.564	302.210	294.848	56.360	−154.385	239.428	189.413	−7.611
	1400.00	63.624	350.244	305.476	301.164	62.676	−189.178	239.633	185.559	−6.923
	1500.00	64.430	354.662	308.609	307.568	69.080	−224.426	239.889	181.688	−6.327
	1600.00	65.084	358.842	311.619	314.045	75.557	−260.103	240.186	177.798	−5.805
	1700.00	65.590	362.804	314.514	320.579	82.091	−296.187	240.514	173.889	−5.343
	1800.00	65.954	366.564	317.303	327.158	88.670	−332.657	240.861	169.960	−4.932
	1900.00	66.183	370.136	319.990	333.766	95.278	−369.493	241.217	166.011	−4.564
	2000.00	66.281	373.534	322.583	340.390	101.902	−406.678	241.569	162.044	−4.232

References

Phase	H / S	C_p
GAS	Ja1	Ja1

CCl3[g] TRICHLOROMETHYL (GAS) 118.369

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	63.660	296.839	296.839	79.496	0.000	−9.006	79.496	92.488	−16.204
	300.00	63.784	297.233	296.840	79.614	0.118	−9.556	79.504	92.569	−16.118
	400.00	69.647	316.434	299.418	86.302	6.806	−40.271	79.955	96.858	−12.648
	500.00	73.509	332.422	304.465	93.475	13.979	−72.736	80.439	101.027	−10.554
	600.00	75.996	346.060	310.289	100.959	21.463	−106.678	80.890	105.102	−9.150
	700.00	77.655	357.908	316.264	108.647	29.151	−141.889	81.285	109.105	−8.142
	800.00	78.809	368.357	322.136	116.473	36.977	−178.213	81.629	113.055	−7.382
	900.00	79.639	377.690	327.799	124.398	44.902	−215.523	81.933	116.965	−6.788
	1000.00	80.256	386.114	333.216	132.394	52.898	−253.720	82.198	120.843	−6.312
	1100.00	80.726	393.787	338.379	140.444	60.948	−292.721	82.429	124.696	−5.921
	1200.00	81.093	400.827	343.294	148.536	69.040	−332.457	82.629	128.529	−5.595
	1300.00	81.384	407.330	347.973	156.660	77.164	−372.869	82.802	132.347	−5.318
	1400.00	81.619	413.370	352.431	164.810	85.314	−413.907	82.952	136.153	−5.080
	1500.00	81.811	419.008	356.684	172.982	93.486	−455.529	83.081	139.948	−4.873
	1600.00	81.971	424.293	360.746	181.172	101.676	−497.697	83.192	143.735	−4.692
	1700.00	82.105	429.267	364.631	189.376	109.880	−540.377	83.288	147.516	−4.533
	1800.00	82.219	433.963	368.354	197.592	118.096	−583.541	83.368	151.292	−4.390
	1900.00	82.316	438.411	371.925	205.819	126.323	−627.162	83.434	155.064	−4.263
	2000.00	82.400	442.635	375.356	214.055	134.559	−671.216	83.485	158.832	−4.148

References

Phase	H / S	C_p
GAS	Ja1	Ja1

CCl4 TETRACHLOROMETHANE 153.822

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
LIQ	298.15	133.888	216.187	216.187	−132.842	0.000	−197.298	−132.842	−62.542	10.957
	300.00	133.888	217.015	216.190	−132.594	0.248	−197.699	−132.736	−62.106	10.814
	349.30	133.888	237.386	217.780	−125.994	6.848	−208.913	−129.992	−50.716	7.584

References

Phase	H / S	C_p	Remarks	
LIQ	Sw1	Ja1	Re1	BPT= 349.3, L= 30.46 kJ

153.822 TETRACHLOROMETHANE (GAS) **CCl4**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	83.404	310.228	310.228	−100.416	0.000	−192.910	−100.416	−58.154	10.188
	300.00	83.591	310.744	310.229	−100.262	0.154	−193.485	−100.403	−57.892	10.080
	400.00	91.688	335.993	313.616	−91.465	8.951	−225.863	−99.578	−43.840	5.725
	500.00	96.614	357.027	320.255	−82.030	18.386	−260.544	−98.616	−30.016	3.136
	600.00	99.685	374.934	327.914	−72.204	28.212	−297.164	−97.640	−16.388	1.427
	700.00	101.699	390.462	335.765	−62.128	38.288	−335.451	−96.696	−2.921	0.218
	800.00	103.081	404.138	343.474	−51.885	48.531	−375.195	−95.787	10.413	−0.680
	900.00	104.067	416.339	350.904	−41.525	58.891	−416.230	−94.912	23.635	−1.372
	1000.00	104.793	427.343	358.007	−31.080	69.336	−458.423	−94.069	36.762	−1.920
	1100.00	105.342	437.358	364.772	−20.572	79.844	−501.665	−93.257	49.805	−2.365
	1200.00	105.767	446.542	371.209	−10.016	90.400	−545.867	−92.474	62.776	−2.733
	1300.00	106.101	455.022	377.334	0.578	100.994	−590.950	−91.718	75.683	−3.041
	1400.00	106.369	462.895	383.168	11.202	111.618	−636.851	−90.985	88.532	−3.303
	1500.00	106.586	470.241	388.731	21.850	122.266	−683.512	−90.274	101.330	−3.529
	1600.00	106.765	477.126	394.042	32.518	132.934	−730.884	−89.582	114.080	−3.724
	1700.00	106.913	483.603	399.122	43.202	143.618	−778.924	−88.908	126.789	−3.896
	1800.00	107.037	489.718	403.987	53.900	154.316	−827.593	−88.252	139.458	−4.047
	1900.00	107.141	495.508	408.653	64.609	165.025	−876.856	−87.612	152.091	−4.181
	2000.00	107.230	501.006	413.134	75.328	175.744	−926.684	−86.990	164.690	−4.301

References

Phase	H / S	C_p
GAS	Sw1	Ja1

C2Cl4[g] TETRACHLOROETHENE (GAS) 165.833

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	95.619	340.938	340.938	−14.226	0.000	−115.877	−14.226	20.591	−3.607
	300.00	95.779	341.530	340.940	−14.049	0.177	−116.508	−14.206	20.807	−3.623
	400.00	105.036	370.366	344.808	−4.003	10.223	−152.149	−13.169	32.322	−4.221
	500.00	112.147	394.617	352.409	6.878	21.104	−190.430	−12.091	43.570	−4.552
	600.00	116.993	415.521	361.226	18.351	32.577	−230.962	−11.050	54.603	−4.754
	700.00	120.341	433.822	370.317	30.227	44.453	−273.448	−10.083	65.468	−4.885
	800.00	122.732	450.056	379.289	42.387	56.613	−317.657	−9.182	76.199	−4.975
	900.00	124.498	464.618	387.975	54.753	68.979	−363.403	−8.333	86.820	−5.039
	1000.00	125.844	477.808	396.309	67.273	81.499	−410.535	−7.534	97.349	−5.085
	1100.00	126.899	489.854	404.274	79.912	94.138	−458.927	−6.780	107.801	−5.119
	1200.00	127.745	500.933	411.873	92.646	106.872	−508.474	−6.066	118.185	−5.144
	1300.00	128.440	511.186	419.123	105.456	119.682	−559.086	−5.384	128.512	−5.164
	1400.00	129.021	520.726	426.044	118.330	132.556	−610.687	−4.731	138.787	−5.178
	1500.00	129.516	529.645	432.656	131.257	145.483	−663.211	−4.100	149.016	−5.189
	1600.00	129.943	538.018	438.983	144.231	158.457	−716.598	−3.486	159.203	−5.197
	1700.00	130.319	545.907	445.042	157.244	171.470	−770.798	−2.887	169.353	−5.204
	1800.00	130.652	553.366	450.855	170.293	184.519	−825.765	−2.300	179.468	−5.208
	1900.00	130.952	560.438	456.438	183.374	197.600	−881.458	−1.723	189.550	−5.211
	2000.00	131.224	567.162	461.808	196.483	210.709	−937.841	−1.159	199.602	−5.213

References

Phase	H / S	C_p
GAS	Sw1	Ja1

236.738 HEXACHLOROETHANE (GAS) **C2Cl6**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	138.932	396.627	396.627	−141.419	0.000	−259.673	−141.419	−56.684	9.931
	300.00	139.260	397.488	396.630	−141.162	0.257	−260.408	−141.382	−56.158	9.778
	400.00	153.460	439.655	402.282	−126.470	14.949	−302.332	−139.165	−28.074	3.666
	500.00	162.265	474.921	413.382	−110.650	30.769	−348.110	−136.720	−0.582	0.061
	600.00	167.939	505.042	426.210	−94.120	47.299	−397.145	−134.257	26.413	−2.299
	700.00	171.797	531.238	439.384	−77.122	64.297	−448.988	−131.845	53.000	−3.955
	800.00	174.534	554.366	452.340	−59.798	81.621	−503.291	−129.485	79.245	−5.174
	900.00	176.537	575.045	464.845	−42.239	99.180	−559.780	−127.169	105.197	−6.105
	1000.00	178.032	593.726	476.814	−24.507	116.912	−618.233	−124.899	130.893	−6.837
	1100.00	179.160	610.750	488.228	−6.645	134.774	−678.470	−122.676	156.364	−7.425
	1200.00	180.012	626.377	499.098	11.316	152.735	−740.337	−120.498	181.635	−7.906
	1300.00	180.652	640.812	509.451	29.350	170.769	−803.706	−118.366	206.726	−8.306
	1400.00	181.126	654.218	519.319	47.441	188.860	−868.465	−116.277	231.655	−8.643
	1500.00	181.467	666.727	528.734	65.571	206.990	−934.519	−114.231	256.435	−8.930
	1600.00	181.702	678.447	537.728	83.730	225.149	−1001.784	−112.228	281.081	−9.176
	1700.00	181.855	689.467	546.333	101.909	243.328	−1070.185	−110.267	305.602	−9.390
	1800.00	181.941	699.864	554.577	120.099	261.518	−1139.657	−108.349	330.010	−9.577
	1900.00	181.979	709.703	562.485	138.296	279.715	−1210.140	−106.474	354.312	−9.741
	2000.00	181.981	719.037	570.081	156.494	297.913	−1281.581	−104.645	378.516	−9.886

References

Phase	H / S	C_p
GAS	Sw1	Ja1

CF[g] FLUOROMETHYLIDYNE (GAS) 31.009

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	29.912	213.029	213.029	255.224	0.000	191.709	255.224	223.653	−39.183
	300.00	29.947	213.214	213.030	255.279	0.055	191.315	255.235	223.457	−38.907
	400.00	31.420	222.048	214.224	258.353	3.129	169.534	255.665	212.792	−27.788
	500.00	32.444	229.174	216.524	261.549	6.325	146.962	255.848	202.048	−21.108
	600.00	33.261	235.164	219.145	264.835	9.611	123.737	255.817	191.287	−16.653
	700.00	33.954	240.344	221.811	268.197	12.973	99.956	255.626	180.546	−13.472
	800.00	34.560	244.919	224.419	271.623	16.399	75.688	255.325	169.839	−11.089
	900.00	35.094	249.021	226.929	275.107	19.883	50.988	254.952	159.175	−9.238
	1000.00	35.565	252.743	229.327	278.640	23.416	25.897	254.526	148.556	−7.760
	1100.00	35.979	256.153	231.613	282.218	26.994	0.450	254.061	137.981	−6.552
	1200.00	36.337	259.299	233.791	285.834	30.610	−25.325	253.568	127.450	−5.548
	1300.00	36.642	262.220	235.867	289.483	34.259	−51.403	253.052	116.961	−4.700
	1400.00	36.896	264.945	237.847	293.161	37.937	−77.762	252.519	106.512	−3.974
	1500.00	37.098	267.498	239.740	296.861	41.637	−104.386	251.971	96.102	−3.347
	1600.00	37.250	269.897	241.550	300.579	45.355	−131.257	251.410	85.729	−2.799
	1700.00	37.353	272.159	243.285	304.309	49.085	−158.361	250.836	75.392	−2.317
	1800.00	37.405	274.296	244.949	308.048	52.824	−185.684	250.248	65.088	−1.889
	1900.00	37.408	276.318	246.547	311.789	56.565	−213.216	249.643	54.818	−1.507
	2000.00	37.362	278.236	248.084	315.528	60.304	−240.944	249.018	44.580	−1.164

References

Phase	H / S	C_p
GAS	Ja1	Ja1

50.008 DIFLUOROMETHYLENE (GAS) **CF2**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	38.958	240.815	240.815	−182.004	0.000	−253.803	−182.004	−191.628	33.572
	300.00	39.020	241.056	240.816	−181.932	0.072	−254.249	−182.006	−191.688	33.376
	400.00	43.058	252.825	242.393	−177.831	4.173	−278.961	−182.155	−194.895	25.451
	500.00	46.511	262.823	245.503	−173.344	8.660	−304.756	−182.363	−198.057	20.691
	600.00	49.040	271.539	249.132	−168.560	13.444	−331.483	−182.632	−201.172	17.514
	700.00	50.897	279.245	252.894	−163.558	18.446	−359.030	−182.959	−204.236	15.240
	800.00	52.289	286.136	256.626	−158.396	23.608	−387.305	−183.326	−207.251	13.532
	900.00	53.352	292.359	260.257	−153.112	28.892	−416.235	−183.722	−210.219	12.201
	1000.00	54.175	298.025	263.754	−147.734	34.270	−445.758	−184.144	−213.140	11.133
	1100.00	54.819	303.220	267.109	−142.282	39.722	−475.824	−184.588	−216.019	10.258
	1200.00	55.325	308.012	270.321	−136.774	45.230	−506.389	−185.054	−218.856	9.527
	1300.00	55.725	312.457	273.393	−131.221	50.783	−537.415	−185.539	−221.653	8.906
	1400.00	56.043	316.599	276.333	−125.632	56.372	−568.870	−186.042	−224.412	8.373
	1500.00	56.298	320.474	279.148	−120.015	61.989	−600.726	−186.561	−227.135	7.910
	1600.00	56.507	324.115	281.846	−114.374	67.630	−632.957	−187.094	−229.822	7.503
	1700.00	56.685	327.546	284.434	−108.714	73.290	−665.542	−187.640	−232.476	7.143
	1800.00	56.845	330.790	286.920	−103.038	78.966	−698.460	−188.196	−235.098	6.822
	1900.00	56.997	333.868	289.311	−97.345	84.659	−731.694	−188.761	−237.688	6.534
	2000.00	57.155	336.795	291.612	−91.638	90.366	−765.229	−189.334	−240.248	6.275

References

Phase	H / S	C_p
GAS	Ja1	Ja1

CF3[g] TRIFLUOROMETHYL (GAS) 69.006

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	49.821	265.078	265.078	−470.282	0.000	−549.315	−470.282	−456.909	80.048
	300.00	49.949	265.387	265.079	−470.190	0.092	−549.806	−470.292	−456.825	79.540
	400.00	57.407	280.783	267.127	−464.820	5.462	−577.133	−470.780	−452.258	59.059
	500.00	63.393	294.272	271.235	−458.764	11.518	−605.900	−471.100	−447.588	46.759
	600.00	67.701	306.232	276.091	−452.197	18.085	−635.936	−471.323	−442.863	38.555
	700.00	70.839	316.916	281.174	−445.262	25.020	−667.104	−471.491	−438.106	32.692
	800.00	73.184	326.536	286.253	−438.056	32.226	−699.284	−471.618	−433.328	28.293
	900.00	74.972	335.264	291.221	−430.644	39.638	−732.381	−471.710	−428.536	24.872
	1000.00	76.357	343.237	296.030	−423.075	47.207	−766.312	−471.781	−423.735	22.134
	1100.00	77.441	350.568	300.659	−415.382	54.900	−801.007	−471.837	−418.927	19.893
	1200.00	78.293	357.344	305.104	−407.594	62.688	−836.407	−471.887	−414.115	18.026
	1300.00	78.967	363.639	309.368	−399.730	70.552	−872.460	−471.934	−409.299	16.446
	1400.00	79.503	369.511	313.456	−391.805	78.477	−909.121	−471.983	−404.479	15.091
	1500.00	79.932	375.011	317.379	−383.833	86.449	−946.350	−472.035	−399.655	13.917
	1600.00	80.281	380.182	321.144	−375.822	94.460	−984.112	−472.093	−394.828	12.890
	1700.00	80.575	385.058	324.761	−367.778	102.504	−1022.376	−472.156	−389.997	11.983
	1800.00	80.835	389.671	328.240	−359.708	110.574	−1061.115	−472.225	−385.162	11.177
	1900.00	81.079	394.048	331.590	−351.612	118.670	−1100.303	−472.298	−380.324	10.456
	2000.00	81.325	398.213	334.818	−343.492	126.790	−1139.917	−472.374	−375.481	9.807

References

Phase	H / S	C_p
GAS	Ja1	Ja1

88.005 TETRAFLUOROMETHANE (GAS) **CF4**[g]

Phase	T	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	61.130	261.417	261.417	–933.199	0.000	–1011.140	–933.199	–888.502	155.662
	300.00	61.293	261.796	261.418	–933.086	0.113	–1011.624	–933.217	–888.225	154.654
	400.00	72.070	280.881	263.947	–926.425	6.774	–1038.778	–934.021	–873.094	114.014
	500.00	80.989	297.978	269.074	–918.747	14.452	–1067.736	–934.400	–857.811	89.615
	600.00	87.196	313.327	275.193	–910.319	22.880	–1098.315	–934.498	–842.480	73.344
	700.00	91.528	327.113	281.643	–901.370	31.829	–1130.349	–934.428	–827.148	61.723
	800.00	94.638	339.549	288.117	–892.054	41.145	–1163.692	–934.248	–811.833	53.007
	900.00	96.944	350.835	294.468	–882.469	50.730	–1198.220	–933.991	–796.546	46.230
	1000.00	98.705	361.144	300.628	–872.683	60.516	–1233.827	–933.685	–781.290	40.810
	1100.00	100.086	370.619	306.566	–862.741	70.458	–1270.421	–933.345	–766.067	36.377
	1200.00	101.195	379.377	312.273	–852.675	80.524	–1307.927	–932.981	–750.876	32.685
	1300.00	102.105	387.514	317.752	–842.508	90.691	–1346.276	–932.599	–735.716	29.561
	1400.00	102.867	395.109	323.009	–832.259	100.940	–1385.412	–932.204	–720.586	26.885
	1500.00	103.515	402.229	328.055	–821.939	111.260	–1425.282	–931.798	–705.484	24.567
	1600.00	104.075	408.928	332.903	–811.559	121.640	–1465.843	–931.381	–690.410	22.540
	1700.00	104.565	415.253	337.563	–801.126	132.073	–1507.055	–930.956	–675.363	20.751
	1800.00	105.001	421.242	342.046	–790.647	142.552	–1548.883	–930.523	–660.340	19.163
	1900.00	105.392	426.930	346.366	–780.127	153.072	–1591.294	–930.083	–645.342	17.742
	2000.00	105.747	432.345	350.530	–769.570	163.629	–1634.259	–929.638	–630.367	16.464

References

Phase	H / S	C_p
GAS	Ja1	Ja1

C2F4[g] TETRAFLUOROETHENE (GAS) 100.016

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	80.549	300.060	300.060	−658.562	0.000	−748.025	−658.562	−623.675	109.265
	300.00	80.778	300.559	300.062	−658.413	0.149	−748.581	−658.560	−623.459	108.554
	400.00	91.798	325.370	303.370	−649.762	8.800	−779.910	−658.411	−611.778	79.890
	500.00	100.375	346.818	309.963	−640.135	18.427	−813.543	−658.172	−600.146	62.697
	600.00	106.915	365.724	317.712	−629.755	28.807	−849.189	−657.899	−588.566	51.239
	700.00	111.824	382.592	325.798	−618.806	39.756	−886.620	−657.607	−577.034	43.059
	800.00	115.508	397.776	333.862	−607.431	51.131	−925.652	−657.291	−565.544	36.926
	900.00	118.375	411.552	341.741	−595.732	62.830	−966.129	−656.953	−554.096	32.159
	1000.00	120.830	424.153	349.361	−583.770	74.792	−1007.923	−656.590	−542.687	28.347
	1100.00	123.280	435.783	356.695	−571.566	86.996	−1050.927	−656.177	−531.316	25.230
	1200.00	126.131	446.627	363.743	−559.100	99.462	−1095.053	−655.659	−519.986	22.634
	1300.00	129.791	456.861	370.515	−546.313	112.249	−1140.232	−654.948	−508.707	20.440
	1400.00	134.664	466.649	377.035	−533.102	125.460	−1186.411	−653.921	−497.494	18.562
	1500.00	141.159	476.151	383.327	−519.326	139.236	−1233.552	−652.418	−486.370	16.937
	1600.00	149.680	485.521	389.422	−504.802	153.760	−1281.636	−650.242	−475.367	15.519
	1700.00	160.635	494.911	395.350	−489.309	169.253	−1330.657	−647.159	−464.526	14.273
	1800.00	174.430	504.469	401.146	−472.581	185.981	−1380.624	−642.898	−453.899	13.172
	1900.00	191.472	514.341	406.842	−454.314	204.248	−1431.562	−637.146	−443.549	12.194
	2000.00	212.166	524.672	412.473	−434.164	224.398	−1483.508	−629.556	−433.547	11.323

References

Phase	H / S	C_p
GAS	Sw1	Re1

138.012

HEXAFLUOROETHANE (GAS) **C2F6**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	106.492	332.194	332.194	−1343.064	0.000	−1442.107	−1343.064	−1257.295	220.273
	300.00	106.855	332.853	332.196	−1342.867	0.197	−1442.723	−1343.072	−1256.762	218.822
	400.00	124.347	366.086	336.608	−1331.273	11.791	−1477.707	−1343.193	−1227.957	160.355
	500.00	138.056	395.371	345.490	−1318.123	24.941	−1515.809	−1342.795	−1199.185	125.278
	600.00	148.470	421.509	356.021	−1303.772	39.292	−1556.677	−1342.023	−1170.531	101.904
	700.00	156.075	444.999	367.084	−1288.523	54.541	−1600.023	−1340.981	−1142.028	85.219
	800.00	161.360	466.209	378.171	−1272.634	70.430	−1645.601	−1339.758	−1113.688	72.716
	900.00	164.813	485.429	389.038	−1256.312	86.752	−1693.198	−1338.445	−1085.507	63.001
	1000.00	166.921	502.912	399.565	−1239.716	103.348	−1742.629	−1337.129	−1057.474	55.237
	1100.00	168.172	518.885	409.697	−1222.957	120.107	−1793.730	−1335.867	−1029.570	48.890
	1200.00	169.054	533.557	419.415	−1206.094	136.970	−1846.362	−1334.680	−1001.778	43.606
	1300.00	170.055	547.125	428.724	−1189.142	153.922	−1900.405	−1333.551	−974.082	39.139
	1400.00	171.662	559.781	437.638	−1172.063	171.001	−1955.757	−1332.418	−946.473	35.313
	1500.00	174.363	571.709	446.182	−1154.773	188.291	−2012.337	−1331.178	−918.948	32.001
	1600.00	178.646	583.089	454.385	−1137.138	205.926	−2070.081	−1329.680	−891.513	29.105
	1700.00	184.999	594.099	462.281	−1118.975	224.089	−2128.942	−1327.730	−864.184	26.553
	1800.00	193.910	604.912	469.905	−1100.053	243.011	−2188.894	−1325.087	−836.989	24.289
	1900.00	205.866	615.701	477.295	−1080.091	262.973	−2249.924	−1321.463	−809.966	22.268
	2000.00	221.355	626.639	484.487	−1058.762	284.302	−2312.039	−1316.525	−783.166	20.454

References

Phase	H / S	C_p
GAS	Sw1	Re1

CH[g] METHYLIDYNE (GAS) 13.019

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	29.188	183.034	183.034	594.128	0.000	539.556	594.128	560.749	–98.241
	300.00	29.185	183.214	183.034	594.182	0.054	539.218	594.139	560.542	–97.599
	400.00	29.180	191.604	184.178	597.098	2.970	520.457	594.566	549.269	–71.727
	500.00	29.385	198.134	186.340	600.025	5.897	500.958	594.700	537.924	–56.197
	600.00	29.772	203.523	188.768	602.981	8.853	480.867	594.612	526.574	–45.842
	700.00	30.311	208.151	191.214	605.984	11.856	460.278	594.368	515.252	–38.449
	800.00	30.972	212.241	193.591	609.048	14.920	439.255	594.031	503.972	–32.906
	900.00	31.726	215.932	195.872	612.182	18.054	417.844	593.645	492.737	–28.598
	1000.00	32.542	219.316	198.049	615.395	21.267	396.079	593.237	481.547	–25.153
	1100.00	33.392	222.457	200.127	618.691	24.563	373.988	592.825	470.398	–22.337
	1200.00	34.245	225.399	202.112	622.073	27.945	351.594	592.422	459.286	–19.992
	1300.00	35.072	228.173	204.011	625.540	31.412	328.914	592.036	448.207	–18.009
	1400.00	35.844	230.801	205.831	629.086	34.958	305.964	591.671	437.157	–16.311
	1500.00	36.530	233.298	207.580	632.705	38.577	282.758	591.327	426.133	–14.839
	1600.00	37.220	235.678	209.262	636.394	42.266	259.309	591.006	415.130	–13.553
	1700.00	37.824	237.953	210.883	640.147	46.019	235.626	590.708	404.147	–12.418
	1800.00	38.357	240.131	212.448	643.956	49.828	211.721	590.430	393.181	–11.410
	1900.00	38.828	242.217	213.960	647.816	53.688	187.603	590.169	382.230	–10.508
	2000.00	39.246	244.220	215.424	651.720	57.592	163.281	589.921	371.292	–9.697
	2100.00	39.618	246.144	216.841	655.664	61.536	138.762	589.683	360.367	–8.964
	2200.00	39.947	247.994	218.215	659.642	65.514	114.054	589.452	349.452	–8.297
	2300.00	40.237	249.777	219.549	663.652	69.524	89.165	589.227	338.548	–7.689
	2400.00	40.492	251.495	220.845	667.688	73.560	64.101	589.005	327.654	–7.131
	2500.00	40.714	253.152	222.104	671.749	77.621	38.868	588.785	316.769	–6.619
	2600.00	40.904	254.753	223.329	675.830	81.702	13.472	588.564	305.893	–6.145
	2700.00	41.065	256.300	224.522	679.929	85.801	–12.081	588.340	295.025	–5.708
	2800.00	41.198	257.796	225.683	684.042	89.914	–37.786	588.111	284.166	–5.301
	2900.00	41.303	259.243	226.816	688.167	94.039	–63.638	587.875	273.315	–4.923
	3000.00	41.382	260.645	227.920	692.302	98.174	–89.633	587.629	262.472	–4.570

References

Phase	H / S	C_p
GAS	Ja1	Ja1

14.027 METHYLENE (GAS) **CH2**[g]

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	34.598	193.912	193.912	386.392	0.000	328.577	386.392	369.251	–64.691
	300.00	34.625	194.126	193.913	386.456	0.064	328.218	386.387	369.144	–64.274
	400.00	36.107	204.289	195.289	389.992	3.600	308.277	385.980	363.452	–47.462
	500.00	37.644	212.510	197.936	393.679	7.287	287.424	385.413	357.884	–37.388
	600.00	39.221	219.512	200.962	397.522	11.130	265.815	384.747	352.439	–30.683
	700.00	40.819	225.678	204.061	401.524	15.132	243.550	384.033	347.110	–25.902
	800.00	42.423	231.233	207.116	405.686	19.294	220.700	383.318	341.885	–22.323
	900.00	44.015	236.322	210.082	410.008	23.616	197.318	382.633	336.747	–19.544
	1000.00	45.579	241.041	212.945	414.488	28.096	173.447	381.990	331.684	–17.325
	1100.00	46.966	245.451	215.701	419.116	32.724	149.120	381.390	326.682	–15.513
	1200.00	48.242	249.593	218.355	423.878	37.486	124.366	380.828	321.734	–14.005
	1300.00	49.382	253.500	220.909	428.760	42.368	99.210	380.298	316.831	–12.730
	1400.00	50.386	257.197	223.371	433.750	47.358	73.673	379.794	311.968	–11.640
	1500.00	51.269	260.704	225.744	438.833	52.441	47.777	379.310	307.140	–10.696
	1600.00	52.043	264.038	228.034	444.000	57.608	21.538	378.841	302.345	–9.871
	1700.00	52.725	267.214	230.246	449.239	62.847	–5.026	378.383	297.578	–9.143
	1800.00	53.326	270.245	232.384	454.542	68.150	–31.900	377.932	292.837	–8.498
	1900.00	53.859	273.143	234.454	459.902	73.510	–59.071	377.484	288.122	–7.921
	2000.00	54.334	275.918	236.458	465.312	78.920	–86.525	377.037	283.430	–7.402
	2100.00	54.759	278.580	238.401	470.767	84.375	–114.250	376.588	278.761	–6.934
	2200.00	55.140	281.136	240.286	476.262	89.870	–142.237	376.134	274.113	–6.508
	2300.00	55.484	283.595	242.116	481.794	95.402	–170.474	375.676	269.486	–6.120
	2400.00	55.795	285.963	243.894	487.358	100.966	–198.953	375.211	264.879	–5.765
	2500.00	56.078	288.246	245.622	492.952	106.560	–227.664	374.739	260.292	–5.438
	2600.00	56.337	290.451	247.304	498.573	112.181	–256.600	374.258	255.723	–5.138
	2700.00	56.575	292.582	248.942	504.218	117.826	–285.752	373.769	251.173	–4.859
	2800.00	56.793	294.643	250.538	509.887	123.495	–315.114	373.271	246.642	–4.601
	2900.00	56.995	296.640	252.093	515.576	129.184	–344.678	372.762	242.128	–4.361
	3000.00	57.182	298.575	253.610	521.285	134.893	–374.439	372.243	237.633	–4.138

References

Phase	H / S	C_p
GAS	Ja1	Ja1

CH3[g] METHYL (GAS) 15.035

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	38.704	194.163	194.163	145.687	0.000	87.797	145.687	147.952	−25.921
	300.00	38.766	194.403	194.164	145.759	0.072	87.438	145.663	147.966	−25.763
	400.00	42.074	206.011	195.725	149.802	4.115	67.397	144.310	148.937	−19.449
	500.00	45.256	215.744	198.780	154.169	8.482	46.297	142.962	150.250	−15.697
	600.00	48.302	224.267	202.331	158.848	13.161	24.288	141.668	151.830	−13.218
	700.00	51.203	231.932	206.021	163.825	18.138	1.472	140.459	153.621	−11.463
	800.00	53.951	238.951	209.704	169.084	23.397	−22.077	139.365	155.577	−10.158
	900.00	56.537	245.456	213.320	174.610	28.923	−46.301	138.396	157.663	−9.151
	1000.00	58.953	251.539	216.841	180.386	34.699	−71.154	137.547	159.851	−8.350
	1100.00	61.188	257.264	220.258	186.394	40.707	−96.597	136.809	162.118	−7.698
	1200.00	63.234	262.678	223.569	192.617	46.930	−122.596	136.169	164.447	−7.158
	1300.00	65.083	267.813	226.777	199.034	53.347	−149.123	135.613	166.827	−6.703
	1400.00	66.725	272.698	229.884	205.627	59.940	−176.151	135.130	169.247	−6.315
	1500.00	68.152	277.351	232.895	212.372	66.685	−203.655	134.704	171.699	−5.979
	1600.00	69.455	281.792	235.813	219.254	73.567	−231.614	134.325	174.177	−5.686
	1700.00	70.621	286.039	238.643	226.259	80.572	−260.007	133.986	176.679	−5.429
	1800.00	71.662	290.105	241.390	233.374	87.687	−288.815	133.680	179.199	−5.200
	1900.00	72.590	294.005	244.058	240.587	94.900	−318.022	133.400	181.736	−4.996
	2000.00	73.419	297.750	246.649	247.889	102.202	−347.611	133.139	184.287	−4.813
	2100.00	74.161	301.350	249.169	255.268	109.581	−377.567	132.891	186.850	−4.648
	2200.00	74.827	304.816	251.620	262.718	117.031	−407.877	132.653	189.425	−4.498
	2300.00	75.426	308.156	254.006	270.231	124.544	−438.526	132.420	192.011	−4.361
	2400.00	75.965	311.377	256.330	277.801	132.114	−469.504	132.191	194.607	−4.236
	2500.00	76.453	314.488	258.594	285.423	139.736	−500.798	131.961	197.212	−4.121
	2600.00	76.896	317.496	260.802	293.091	147.404	−532.398	131.728	199.827	−4.015
	2700.00	77.298	320.405	262.956	300.801	155.114	−564.294	131.492	202.451	−3.917
	2800.00	77.664	323.223	265.058	308.549	162.862	−596.476	131.248	205.083	−3.826
	2900.00	77.999	325.955	267.111	316.332	170.645	−628.936	130.997	207.724	−3.742
	3000.00	78.305	328.604	269.117	324.148	178.461	−661.665	130.735	210.375	−3.663

References

Phase	H / S	C_p
GAS	Ja1,Nb1	Ja1

16.043 METHANE (GAS) **CH4**[g]

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	35.645	186.214	186.214	−74.873	0.000	−130.393	−74.873	−50.757	8.892
	300.00	35.707	186.434	186.214	−74.807	0.066	−130.737	−74.930	−50.607	8.811
	400.00	40.489	197.310	187.665	−71.015	3.858	−149.939	−77.986	−42.036	5.489
	500.00	46.349	206.968	190.574	−66.676	8.197	−170.160	−80.824	−32.714	3.418
	600.00	52.232	215.942	194.062	−61.745	13.128	−191.310	−83.331	−22.851	1.989
	700.00	57.798	224.417	197.798	−56.240	18.633	−213.332	−85.480	−12.596	0.940
	800.00	62.929	232.475	201.633	−50.200	24.673	−236.180	−87.270	−2.057	0.134
	900.00	67.591	240.160	205.491	−43.670	31.203	−259.814	−88.722	8.685	−0.504
	1000.00	71.782	247.503	209.327	−36.698	38.175	−284.200	−89.876	19.572	−1.022
	1100.00	75.523	254.523	213.119	−29.329	45.544	−309.304	−90.773	30.562	−1.451
	1200.00	78.839	261.240	216.852	−21.607	53.266	−335.095	−91.454	41.624	−1.812
	1300.00	81.764	267.668	220.515	−13.574	61.299	−361.543	−91.954	52.736	−2.119
	1400.00	84.333	273.824	224.105	−5.266	69.607	−388.619	−92.304	63.880	−2.383
	1500.00	86.583	279.721	227.617	3.282	78.155	−416.299	−92.531	75.044	−2.613
	1600.00	88.553	285.373	231.052	12.041	86.914	−444.555	−92.659	86.221	−2.815
	1700.00	90.281	290.794	234.407	20.985	95.858	−473.366	−92.706	97.402	−2.993
	1800.00	91.808	295.999	237.686	30.091	104.964	−502.707	−92.688	108.585	−3.151
	1900.00	93.174	301.000	240.887	39.341	114.214	−532.559	−92.617	119.765	−3.293
	2000.00	94.420	305.811	244.014	48.721	123.594	−562.901	−92.504	130.940	−3.420

References

Phase	H / S	C_p
GAS	Ja1	Ja1

C2H2[g] ACETYLENE (GAS) 26.038

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	44.059	200.958	200.958	226.731	0.000	166.815	226.731	209.201	−36.651
	300.00	44.214	201.231	200.959	226.813	0.082	166.443	226.728	209.092	−36.406
	400.00	50.587	214.902	202.780	231.580	4.849	145.619	226.515	203.244	−26.541
	500.00	54.873	226.674	206.409	236.863	10.132	123.526	226.213	197.458	−20.628
	600.00	58.261	236.987	210.664	242.525	15.794	100.333	225.786	191.745	−16.693
	700.00	61.159	246.191	215.093	248.499	21.768	76.166	225.266	186.112	−13.888
	800.00	63.737	254.529	219.509	254.746	28.015	51.123	224.712	180.557	−11.789
	900.00	66.076	262.173	223.831	261.239	34.508	25.283	224.165	175.070	−10.161
	1000.00	68.218	269.247	228.023	267.955	41.224	−1.292	223.639	169.644	−8.861
	1100.00	70.189	275.843	232.074	274.877	48.146	−28.550	223.143	164.269	−7.800
	1200.00	72.002	282.029	235.982	281.988	55.257	−56.447	222.685	158.937	−6.918
	1300.00	73.667	287.859	239.750	289.272	62.541	−84.944	222.265	153.642	−6.173
	1400.00	75.190	293.375	243.385	296.716	69.985	−114.008	221.887	148.377	−5.536
	1500.00	76.575	298.610	246.894	304.306	77.575	−143.610	221.549	143.139	−4.985
	1600.00	77.824	303.593	250.283	312.027	85.296	−173.722	221.251	137.921	−4.503
	1700.00	78.941	308.345	253.560	319.866	93.135	−204.321	220.989	132.721	−4.078
	1800.00	79.926	312.886	256.731	327.810	101.079	−235.384	220.759	127.536	−3.701
	1900.00	80.780	317.231	259.801	335.847	109.116	−266.891	220.554	122.363	−3.364
	2000.00	81.505	321.393	262.778	343.962	117.231	−298.824	220.365	117.200	−3.061

References

Phase	H / S	C_p
GAS	Ja1	Ja1

28.054

ETHENE (GAS) **C2H4**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	42.891	219.334	219.334	52.467	0.000	−12.928	52.467	68.420	−11.987
	300.00	43.055	219.600	219.335	52.546	0.079	−13.334	52.408	68.519	−11.930
	400.00	53.038	233.331	221.140	57.343	4.876	−35.989	49.319	74.363	−9.711
	500.00	62.493	246.205	224.878	63.131	10.664	−59.972	46.599	80.947	−8.456
	600.00	70.663	258.340	229.454	69.799	17.332	−85.205	44.248	88.043	−7.665
	700.00	77.713	269.775	234.405	77.226	24.759	−111.617	42.243	95.505	−7.127
	800.00	83.841	280.561	239.507	85.310	32.843	−139.139	40.575	103.232	−6.740
	900.00	89.196	290.752	244.640	93.968	41.501	−167.709	39.218	111.149	−6.451
	1000.00	93.892	300.399	249.738	103.128	50.661	−197.271	38.131	119.201	−6.226
	1100.00	98.011	309.545	254.763	112.727	60.260	−227.772	37.275	127.352	−6.047
	1200.00	101.625	318.231	259.693	122.713	70.246	−259.165	36.613	135.571	−5.901
	1300.00	104.791	326.494	264.516	133.037	80.570	−291.404	36.113	143.839	−5.780
	1400.00	107.562	334.363	269.227	143.658	91.191	−324.450	35.747	152.140	−5.676
	1500.00	109.986	341.869	273.821	154.538	102.071	−358.265	35.492	160.463	−5.588
	1600.00	112.107	349.036	278.300	165.645	113.178	−392.813	35.329	168.800	−5.511
	1700.00	113.969	355.890	282.664	176.951	124.484	−428.061	35.240	177.145	−5.443
	1800.00	115.612	362.452	286.915	188.432	135.965	−463.981	35.212	185.494	−5.383
	1900.00	117.077	368.742	291.058	200.068	147.601	−500.543	35.233	193.842	−5.329
	2000.00	118.404	374.782	295.094	211.843	159.376	−537.721	35.294	202.189	−5.281

References

Phase	H / S	C_p
GAS	Ja1	Ja1

30.070

ETHANE (GAS) **C2H6**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	52.541	229.602	229.602	−84.684	0.000	−153.140	−84.684	−32.830	5.752
	300.00	52.797	229.928	229.603	−84.587	0.097	−153.565	−84.778	−32.508	5.660
	400.00	66.065	246.962	231.836	−78.633	6.051	−177.418	−89.617	−14.339	1.873
	500.00	78.156	263.025	236.482	−71.413	13.271	−202.925	−93.826	4.980	−0.520
	600.00	89.120	278.260	242.186	−63.040	21.644	−229.996	−97.401	25.088	−2.184
	700.00	99.012	292.754	248.383	−53.624	31.060	−258.552	−100.356	45.745	−3.414
	800.00	107.883	306.566	254.800	−43.271	41.413	−288.524	−102.709	66.784	−4.361
	900.00	115.785	319.738	261.289	−32.080	52.604	−319.844	−104.507	88.084	−5.112
	1000.00	122.771	332.306	267.767	−20.145	64.539	−352.451	−105.821	109.557	−5.723

References

Phase	H / S	C_p
GAS	Sw1	Re1

C3H4[g] PROPADIENE (GAS) 40.065

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	59.058	244.037	244.037	192.129	0.000	119.369	192.129	202.428	−35.465
	300.00	59.307	244.403	244.038	192.238	0.109	118.918	192.084	202.493	−35.257
	400.00	71.831	263.222	246.519	198.810	6.681	93.521	189.733	206.322	−26.943
	500.00	82.662	280.444	251.605	206.548	14.419	66.326	187.633	210.717	−22.014
	600.00	91.965	296.359	257.755	215.292	23.163	37.476	185.777	215.513	−18.762
	700.00	99.907	311.149	264.339	224.896	32.767	7.092	184.171	220.599	−16.461
	800.00	106.656	324.942	271.062	235.233	43.104	−24.720	182.831	225.898	−14.750
	900.00	112.378	337.844	277.773	246.193	54.064	−57.867	181.743	231.349	−13.427
	1000.00	117.240	349.943	284.392	257.680	65.551	−92.263	180.865	236.909	−12.375

References

Phase	H / S	C_p	Remarks
GAS	Sw1	Re1	La1 BPT= 239.3, L= 20.96 kJ

C3H4[PY][g] PROPYNE (GAS) 40.065

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	60.677	248.221	248.221	185.435	0.000	111.428	185.435	194.487	−34.073
	300.00	60.907	248.597	248.222	185.547	0.112	110.968	185.393	194.543	−33.873
	400.00	72.522	267.749	250.755	192.233	6.798	85.133	183.156	197.934	−25.847
	500.00	82.563	285.038	255.909	199.999	14.564	57.480	181.084	201.872	−21.089
	600.00	91.226	300.876	262.102	208.700	23.265	28.174	179.185	206.210	−17.952
	700.00	98.704	315.514	268.700	218.205	32.770	−2.655	177.480	210.852	−15.734
	800.00	105.189	329.128	275.413	228.407	42.972	−34.895	176.005	215.723	−14.085
	900.00	110.875	341.852	282.095	239.216	53.781	−68.451	174.767	220.765	−12.813
	1000.00	115.955	353.802	288.675	250.562	65.127	−103.240	173.747	225.932	−11.801

References

Phase	H / S	C_p
GAS	Sw1	Re1

42.081

CYCLOPROPANE (GAS)

C3H6[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	90.196	238.012	238.012	53.220	0.000	−17.743	53.220	104.278	−18.269
	300.00	90.591	238.571	238.013	53.387	0.167	−18.184	53.180	104.595	−18.212
	400.00	115.060	267.857	241.842	63.626	10.406	−43.517	51.589	122.011	−15.933
	500.00	143.469	296.528	249.913	76.527	23.307	−71.737	51.730	139.641	−14.588
	600.00	174.451	325.390	260.082	92.404	39.184	−102.829	54.079	157.043	−13.672
	700.00	207.539	354.741	271.501	111.487	58.267	−136.831	59.014	173.852	−12.973
	800.00	242.536	384.718	283.773	133.976	80.756	−173.798	66.872	189.757	−12.390
	900.00	279.348	415.392	296.686	160.055	106.835	−213.798	77.929	204.488	−11.868
	1000.00	317.927	446.806	310.121	189.904	136.684	−256.901	92.410	217.807	−11.377
	1100.00	358.245	478.984	324.004	223.698	170.478	−303.184	110.520	229.501	−10.898
	1200.00	400.284	511.946	338.287	261.611	208.391	−352.724	132.461	239.379	−10.420
	1300.00	444.035	545.702	352.939	303.812	250.592	−405.600	158.426	247.264	−9.935
	1400.00	489.490	580.261	367.937	350.474	297.254	−461.892	188.607	252.993	−9.439
	1500.00	536.644	615.631	383.266	401.767	348.547	−521.679	223.197	256.412	−8.929
	1600.00	585.495	651.815	398.916	457.860	404.640	−585.045	262.384	257.375	−8.402
	1700.00	636.039	688.819	414.876	518.922	465.702	−652.070	306.355	255.740	−7.858
	1800.00	688.275	726.644	431.142	585.124	531.904	−722.836	355.294	251.376	−7.295

References

Phase	H / S	C_p	Remarks	
GAS	La1	La1	La1	BPT= 240.00, L= 20.8 kJ

42.081

PROPENE (GAS)

C3H6[P][g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	63.867	267.049	267.049	20.418	0.000	−59.203	20.418	62.819	−11.006
	300.00	64.184	267.445	267.050	20.536	0.118	−59.697	20.329	63.082	−10.984
	400.00	80.322	288.164	269.766	27.777	7.359	−87.488	15.741	78.039	−10.191
	500.00	94.670	307.660	275.414	36.541	16.123	−117.289	11.744	94.089	−9.829
	600.00	107.361	326.067	282.337	46.656	26.238	−148.984	8.331	110.888	−9.654
	700.00	118.526	343.474	289.839	57.963	37.545	−182.469	5.489	128.214	−9.567
	800.00	128.297	359.953	297.582	70.315	49.897	−217.648	3.211	145.908	−9.527
	900.00	136.808	375.568	305.388	83.580	63.162	−254.431	1.454	163.855	−9.510
	1000.00	144.189	390.373	313.153	97.639	77.221	−292.735	0.144	181.974	−9.505

References

Phase	H / S	C_p
GAS	Sw1	Re1

C3H8[g] PROPANE (GAS) 44.097

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	73.789	270.019	270.019	−103.847	0.000	−184.353	−103.847	−23.370	4.094
	300.00	74.196	270.477	270.021	−103.710	0.137	−184.853	−103.971	−22.870	3.982
	400.00	94.893	294.716	273.186	−95.235	8.612	−213.121	−110.230	5.133	−0.670
	500.00	113.191	317.899	279.828	−84.811	19.036	−243.761	−115.491	34.604	−3.615
	600.00	129.282	339.991	288.030	−72.670	31.177	−276.665	−119.807	65.043	−5.662
	700.00	143.358	361.001	296.966	−59.022	44.825	−311.723	−123.245	96.135	−7.174
	800.00	155.614	380.963	306.229	−44.059	59.788	−348.830	−125.865	127.663	−8.336
	900.00	166.240	399.921	315.595	−27.954	75.893	−387.882	−127.756	159.474	−9.256
	1000.00	175.431	417.923	324.935	−10.859	92.988	−428.782	−129.034	191.462	−10.001
	1100.00	183.379	435.025	334.173	7.091	110.938	−471.437	−129.806	223.553	−10.616
	1200.00	190.276	451.284	343.260	25.782	129.629	−515.759	−130.165	255.696	−11.130
	1300.00	196.315	466.758	352.170	45.117	148.964	−561.668	−130.187	287.854	−11.566
	1400.00	201.690	481.506	360.885	65.022	168.869	−609.087	−129.927	320.002	−11.939
	1500.00	206.592	495.591	369.400	85.440	189.287	−657.947	−129.420	352.124	−12.262

References

Phase	H / S	C_p	Remarks
GAS	Sw1	Re1	NBPT= 231.1

C4H6[g] BUT−1−YNE (GAS) 54.092

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	116.251	290.897	290.897	166.105	0.000	79.374	166.105	203.107	−35.583
	300.00	116.439	291.617	290.900	166.320	0.215	78.835	166.097	203.336	−35.404
	400.00	130.211	326.859	295.612	178.603	12.498	47.860	165.514	215.836	−28.185
	500.00	148.030	357.778	305.002	192.493	26.388	13.604	165.311	228.454	−23.866
	600.00	167.994	386.506	316.214	208.280	42.175	−23.624	165.990	241.037	−20.984
	700.00	189.451	413.997	328.231	226.141	60.036	−63.656	167.925	253.412	−18.910
	800.00	212.128	440.762	340.630	246.211	80.106	−106.399	171.440	265.405	−17.329
	900.00	235.896	467.109	353.222	268.603	102.498	−151.795	176.778	276.849	−16.068
	1000.00	260.685	493.237	365.919	293.424	127.319	−199.814	184.111	287.595	−15.022
	1100.00	286.457	519.284	378.677	320.773	154.668	−250.440	193.587	297.503	−14.127
	1200.00	313.189	545.348	391.480	350.747	184.642	−303.671	205.344	306.448	−13.339
	1300.00	340.866	571.504	404.321	383.442	217.337	−359.513	219.511	314.316	−12.629
	1400.00	369.479	597.806	417.201	418.952	252.847	−417.977	236.211	320.999	−11.977
	1500.00	399.019	624.299	430.123	457.369	291.264	−479.080	255.566	326.396	−11.366
	1600.00	429.484	651.019	443.093	498.786	332.681	−542.844	277.694	330.412	−10.787
	1700.00	460.870	677.993	456.116	543.296	377.191	−609.292	302.708	332.957	−10.231
	1800.00	493.173	705.246	469.198	590.991	424.886	−678.452	330.720	333.943	−9.691

References

Phase	H / S	C_p	Remarks
GAS	La1	La1	La1 BPT= 280.9, L= 24.5 kJ

56.108

CYCLOBUTANE (GAS)

C4H8[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	70.641	265.501	265.501	26.652	0.000	−52.507	26.652	110.188	−19.304
	300.00	71.229	265.939	265.502	26.783	0.131	−52.999	26.506	110.707	−19.276
	400.00	100.420	290.546	268.659	35.407	8.755	−80.812	19.358	139.892	−18.268
	500.00	125.011	315.675	275.552	46.714	20.062	−111.124	13.650	170.713	−17.834
	600.00	145.630	340.345	284.305	60.276	33.624	−143.931	9.176	202.565	−17.635
	700.00	162.905	364.131	294.022	75.728	49.076	−179.163	5.764	235.080	−17.542
	800.00	177.464	386.861	304.217	92.767	66.115	−216.722	3.295	268.019	−17.500
	900.00	189.935	408.500	314.612	111.151	84.499	−256.499	1.650	301.216	−17.482
	1000.00	200.945	429.092	325.039	130.705	104.053	−298.387	0.712	334.558	−17.475

References

Phase	H / S	C_p	Remarks
GAS	Sw1	Re1	La1 BPT= 265.4, L= 24.2 kJ

56.108

2−METHYLPROP−1−ENE (GAS)

C4H8[l][g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	90.141	293.701	293.701	−16.903	0.000	−104.470	−16.903	58.225	−10.201
	300.00	90.543	294.260	293.702	−16.736	0.167	−105.014	−17.013	58.692	−10.219
	400.00	111.269	323.193	297.507	−6.629	10.274	−135.906	−22.677	84.797	−11.073
	500.00	130.031	350.074	305.363	5.452	22.355	−169.584	−27.611	112.253	−11.727
	600.00	146.884	375.299	314.938	19.314	36.217	−205.866	−31.787	140.631	−12.243
	700.00	161.883	399.091	325.276	34.767	51.670	−244.597	−35.197	169.647	−12.659
	800.00	175.083	421.589	335.922	51.631	68.534	−285.641	−37.841	199.100	−13.000
	900.00	186.537	442.889	346.635	69.726	86.629	−328.875	−39.775	228.841	−13.282
	1000.00	196.301	463.063	357.278	88.882	105.785	−374.181	−41.111	258.763	−13.516

References

Phase	H / S	C_p	Remarks
GAS	Sw1	Re1	NBPT= 266.3

C4H10[g] BUTANE (GAS) 58.123

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	98.273	310.227	310.228	−126.148	0.000	−218.642	−126.148	−16.985	2.976
	300.00	98.761	310.837	310.229	−125.966	0.182	−219.217	−126.296	−16.307	2.839
	400.00	124.012	342.761	314.412	−114.808	11.340	−251.913	−133.816	21.518	−2.810
	500.00	146.981	372.944	323.127	−101.239	24.909	−287.711	−140.185	61.113	−6.384
	600.00	167.650	401.604	333.838	−85.489	40.659	−326.451	−145.400	101.881	−8.870
	700.00	186.002	428.855	345.482	−67.787	58.361	−367.985	−149.500	143.434	−10.703
	800.00	202.021	454.764	357.536	−48.366	77.782	−412.177	−152.539	185.501	−12.112
	900.00	215.689	479.371	369.718	−27.461	98.687	−458.894	−154.638	227.891	−13.226
	1000.00	226.990	502.702	381.861	−5.307	120.841	−508.009	−155.980	270.472	−14.128
	1100.00	235.907	524.773	393.859	17.858	144.006	−559.393	−156.765	313.159	−14.871
	1200.00	242.423	545.597	405.645	41.794	167.942	−612.922	−157.202	355.901	−15.492
	1300.00	246.521	565.179	417.171	66.262	192.410	−668.471	−157.505	398.672	−16.019
	1400.00	248.184	583.524	428.406	91.017	217.165	−725.916	−157.887	441.468	−16.471
	1500.00	247.395	600.634	439.324	115.817	241.965	−785.134	−158.566	484.300	−16.865

References

Phase	H / S	C_p
GAS	Sw1	Re1

C5H8[g] CYCLOPENTENE (GAS) 68.119

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	75.013	289.768	289.768	32.928	0.000	−53.466	32.928	110.940	−19.436
	300.00	75.611	290.234	289.769	33.067	0.139	−54.003	32.775	111.425	−19.401
	400.00	105.854	316.223	293.108	42.174	9.246	−84.315	25.073	138.837	−18.130
	500.00	132.246	342.748	300.384	54.110	21.182	−117.264	18.662	168.046	−17.556
	600.00	155.112	368.931	309.635	68.506	35.578	−152.853	13.441	198.432	−17.275
	700.00	174.779	394.358	319.933	85.026	52.098	−191.025	9.318	229.604	−17.133
	800.00	191.572	418.823	330.776	103.366	70.438	−231.692	6.227	261.296	−17.061
	900.00	205.817	442.232	341.869	123.255	90.327	−274.754	4.055	293.319	−17.024
	1000.00	217.840	464.558	353.031	144.455	111.527	−320.103	2.644	325.541	−17.005

References

Phase	H / S	C_p
GAS	Sw1	Re1

68.119

PENTA–1,2–DIENE (GAS)

C5H8[P][g]

Phase	T	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	105.075	333.616	333.616	145.603	0.000	46.135	145.603	210.542	–36.886
	300.00	105.665	334.268	333.618	145.798	0.195	45.518	145.505	210.945	–36.729
	400.00	132.228	368.514	338.108	157.766	12.163	10.360	140.664	233.512	–30.494
	500.00	152.822	400.306	347.410	172.051	26.448	–28.102	136.604	257.208	–26.870
	600.00	170.285	429.750	358.710	188.227	42.624	–69.623	133.162	281.662	–24.521
	700.00	185.587	457.174	370.840	206.037	60.434	–113.985	130.330	306.644	–22.882
	800.00	199.136	482.858	383.253	225.287	79.684	–161.000	128.148	331.989	–21.677
	900.00	211.124	507.020	395.676	245.812	100.209	–210.506	126.612	357.568	–20.753
	1000.00	221.655	529.821	407.961	267.463	121.860	–262.358	125.652	383.286	–20.021

References

Phase	H / S	C_p	Remarks
GAS	La1	La1	La1 NBPT= 318.1

70.134

CYCLOPENTANE (GAS)

C5H10[g]

Phase	T	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	82.876	292.989	292.989	–77.237	0.000	–164.592	–77.237	38.777	–6.794
	300.00	83.576	293.504	292.991	–77.083	0.154	–165.134	–77.429	39.497	–6.877
	400.00	118.997	322.511	296.707	–66.915	10.322	–195.920	–86.976	79.960	–10.442
	500.00	149.916	352.466	304.859	–53.434	23.803	–229.667	–94.763	122.630	–12.811
	600.00	176.721	382.228	315.281	–37.069	40.168	–266.406	–100.945	166.715	–14.514
	700.00	199.803	411.248	326.929	–18.214	59.023	–306.087	–105.669	211.717	–15.799
	800.00	219.548	439.252	339.230	2.780	80.017	–348.621	–109.060	257.305	–16.800
	900.00	236.347	466.108	351.847	25.598	102.835	–393.899	–111.278	303.245	–17.600
	1000.00	250.588	491.767	364.566	49.964	127.201	–441.803	–112.527	349.378	–18.250

References

Phase	H / S	C_p
GAS	Sw1	Re1

C_5H_{12}[g] PENTANE (GAS) 72.150

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	120.064	349.055	349.055	−146.440	0.000	−250.511	−146.440	−8.180	1.433
	300.00	120.706	349.800	349.057	−146.217	0.223	−251.157	−146.617	−7.321	1.275
	400.00	153.319	389.088	354.194	−132.482	13.958	−288.117	−155.502	40.489	−5.287
	500.00	182.047	426.455	364.941	−115.683	30.757	−328.911	−162.894	90.373	−9.441
	600.00	207.208	461.922	378.175	−96.192	50.248	−373.345	−168.879	141.611	−12.328
	700.00	229.120	495.549	392.562	−74.350	72.090	−421.234	−173.554	193.746	−14.458
	800.00	248.102	527.413	407.445	−50.465	95.975	−472.396	−177.007	246.467	−16.093
	900.00	264.471	557.605	422.467	−24.816	121.624	−526.661	−179.369	299.554	−17.386
	1000.00	278.546	586.217	437.424	2.352	148.792	−583.864	−180.819	352.853	−18.431

References

Phase	H / S	C_p
GAS	Sw1	Re1

C_6H_6 BENZENE 78.114

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
LIQ	298.15	136.106	173.259	173.259	49.036	0.000	−2.621	49.036	124.534	−21.818
	300.00	136.106	174.101	173.262	49.288	0.252	−2.943	49.033	125.003	−21.765
	352.81	136.106	196.170	175.084	56.476	7.440	−12.735	48.586	138.404	−20.491

References

Phase	H / S	C_p	Remarks	
LIQ	La1	La1	La1	MPT= 278.634, L= 9.837 kJ / BPT= 352.81, L= 30.75 kJ

78.114

BENZENE (GAS) **C6H6**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	82.530	269.308	269.308	82.927	0.000	2.633	82.927	129.789	−22.738
	300.00	83.109	269.820	269.310	83.080	0.153	2.134	82.825	130.080	−22.649
	400.00	112.045	297.800	272.929	92.876	9.949	−26.245	77.681	146.629	−19.148
	500.00	136.661	325.523	280.687	105.345	22.418	−57.416	73.396	164.379	−17.173
	600.00	157.385	352.327	290.409	120.078	37.151	−91.318	69.860	182.920	−15.925
	700.00	174.644	377.926	301.098	136.707	53.780	−127.842	67.006	201.998	−15.073
	800.00	188.866	402.206	312.233	154.906	71.979	−166.859	64.803	221.440	−14.459
	900.00	200.477	425.145	323.517	174.393	91.466	−208.238	63.170	241.123	−13.994
	1000.00	209.907	446.773	334.772	194.928	112.001	−251.845	61.979	260.963	−13.631
	1100.00	217.582	467.151	345.889	216.316	133.389	−297.551	61.116	280.906	−13.339
	1200.00	223.930	486.364	356.803	238.401	155.474	−345.236	60.492	300.916	−13.099
	1300.00	229.377	504.507	367.473	261.072	178.145	−394.788	60.051	320.970	−12.897
	1400.00	234.353	521.690	377.880	284.260	201.333	−446.105	59.772	341.052	−12.725
	1500.00	239.284	538.026	388.017	307.941	225.014	−499.098	59.672	361.148	−12.576

References

Phase	H / S	C_p
GAS	Sw1	Re1

82.145

CYCLOHEXENE **C6H10**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
LIQ	298.15	140.206	216.187	216.187	−38.828	0.000	−103.284	−38.828	101.796	−17.834
	300.00	140.206	217.055	216.190	−38.569	0.259	−103.685	−38.930	102.669	−17.876
	400.00	140.206	257.389	221.689	−24.548	14.280	−127.504	−45.661	150.824	−19.696

References

Phase	H / S	C_p	Remarks
LIQ	Sw1	La1	NBPT= 356

C6H10[g] CYCLOHEXENE (GAS) 82.145

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	103.719	310.855	310.855	−5.356	0.000	−98.037	−5.356	107.043	−18.753
	300.00	104.543	311.499	310.857	−5.163	0.193	−98.613	−5.525	107.741	−18.759
	400.00	145.219	347.321	315.466	7.386	12.742	−131.542	−13.727	146.786	−19.168
	500.00	179.020	383.476	325.461	23.651	29.007	−168.087	−20.062	187.683	−19.607
	600.00	206.929	418.664	338.081	42.994	48.350	−208.205	−24.846	229.704	−19.998
	700.00	229.934	452.346	352.018	64.874	70.230	−251.769	−28.325	272.421	−20.328
	800.00	249.020	484.334	366.576	88.850	94.206	−298.617	−30.656	315.557	−20.604
	900.00	265.173	514.621	381.359	114.580	119.936	−348.579	−31.995	358.923	−20.831
	1000.00	279.378	543.308	396.132	141.820	147.176	−401.488	−32.490	402.392	−21.019

References

Phase	H / S	C_p
GAS	Sw1	Re1

C6H12 CYCLOHEXANE 84.161

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
LIQ	298.15	156.482	204.347	204.347	−156.231	0.000	−217.157	−156.231	26.886	−4.710
	300.00	156.482	205.315	204.350	−155.942	0.289	−217.536	−156.357	28.022	−4.879
	353.40	156.482	230.949	206.485	−147.585	8.646	−229.203	−160.368	61.169	−9.041

References

Phase	H / S	C_p	Remarks
LIQ	Sw1	La1	BPT= 353.4, L= 30.1 kJ

84.161

CYCLOHEXANE (GAS) **C6H12**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	105.558	298.345	298.345	−123.135	0.000	−212.087	−123.135	31.956	−5.599
	300.00	106.415	299.001	298.347	−122.939	0.196	−212.639	−123.354	32.919	−5.732
	400.00	150.339	335.744	303.060	−110.062	13.073	−244.359	−134.134	86.696	−11.321
	500.00	189.535	373.589	313.376	−93.029	30.106	−279.823	−142.624	142.933	−14.932
	600.00	224.085	411.269	326.559	−72.309	50.826	−319.071	−148.960	200.674	−17.470
	700.00	254.066	448.121	341.306	−48.364	74.771	−362.049	−153.311	259.316	−19.350
	800.00	279.558	483.761	356.899	−21.646	101.489	−408.654	−155.853	318.457	−20.793
	900.00	300.641	517.948	372.908	7.401	130.536	−458.753	−156.851	377.820	−21.928
	1000.00	317.394	550.528	389.055	38.338	161.473	−512.190	−156.651	437.226	−22.838

References

Phase	H / S	C_p
GAS	Sw1	Re1

84.161

METHYLCYCLOPENTANE **C6H12**[M]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
LIQ	298.15	158.699	247.944	247.944	−138.407	0.000	−212.331	−138.407	31.711	−5.556
	300.00	158.699	248.925	247.947	−138.113	0.294	−212.791	−138.529	32.767	−5.705
	344.84	158.699	271.032	249.545	−130.997	7.410	−224.460	−141.753	58.593	−8.875

References

Phase	H / S	C_p	Remarks	
LIQ	Sw1	La1	La1	BPT= 344.84, L= 29.3 kJ

C6H12[M][g] METHYLCYCLOPENTANE (GAS) 84.161

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	109.807	340.018	340.018	−106.692	0.000	−208.068	−106.692	35.974	−6.303
	300.00	110.624	340.699	340.020	−106.488	0.204	−208.698	−106.903	36.860	−6.418
	400.00	151.873	378.307	344.868	−93.317	13.375	−244.639	−117.389	86.416	−11.285
	500.00	187.765	416.147	355.347	−76.292	30.400	−284.366	−125.887	138.390	−14.458
	600.00	218.781	453.193	368.583	−55.926	50.766	−327.842	−132.577	191.903	−16.707
	700.00	245.400	488.970	383.242	−32.682	74.010	−374.962	−137.629	246.404	−18.387
	800.00	268.103	523.262	398.618	−6.977	99.715	−425.586	−141.184	301.525	−19.688
	900.00	287.370	555.984	414.300	20.824	127.516	−479.562	−143.428	357.011	−20.720
	1000.00	303.683	587.129	430.038	50.399	157.091	−536.730	−144.591	412.686	−21.557

References

Phase	H / S	C_p
GAS	Sw1	Re1

C6H14 HEXANE 86.177

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
LIQ	298.15	195.016	296.018	296.018	−198.782	0.000	−287.040	−198.782	−4.035	0.707
	300.00	195.016	297.224	296.022	−198.421	0.361	−287.589	−198.890	−2.826	0.492
	341.85	195.016	322.691	297.762	−190.260	8.522	−300.572	−201.576	24.699	−3.774

References

Phase	H / S	C_p	Remarks	
LIQ	La1	La1	La1	NBPT= 341.9

86.177

HEXANE (GAS) **C6H14**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	143.002	388.510	388.510	−167.193	0.000	−283.027	−167.193	−0.023	0.004
	300.00	143.765	389.397	388.513	−166.928	0.265	−283.747	−167.396	1.015	−0.177
	400.00	182.507	436.178	394.629	−150.574	16.619	−325.045	−177.605	58.738	−7.670
	500.00	216.573	480.646	407.425	−130.582	36.611	−370.905	−186.059	118.837	−12.415
	600.00	246.353	522.827	423.175	−107.402	59.791	−421.098	−192.864	180.482	−15.712
	700.00	272.235	562.793	440.291	−81.442	85.751	−475.397	−198.137	243.144	−18.144
	800.00	294.610	600.643	457.991	−53.072	114.121	−533.586	−201.981	306.463	−20.010
	900.00	313.866	636.483	475.850	−22.623	144.570	−595.458	−204.551	370.185	−21.485
	1000.00	330.394	670.430	493.626	9.611	176.804	−660.819	−206.059	434.134	−22.677
	1100.00	344.581	702.602	511.175	43.377	210.570	−729.485	−206.698	498.191	−23.657
	1200.00	356.819	733.122	528.410	78.462	245.655	−801.285	−206.635	562.273	−24.475
	1300.00	367.495	762.114	545.281	114.689	281.882	−876.059	−206.002	626.327	−25.166
	1400.00	376.999	789.702	561.763	151.922	319.115	−953.661	−204.894	690.313	−25.756
	1500.00	385.722	816.013	577.842	190.063	357.256	−1033.956	−203.366	754.206	−26.264

References

Phase	H / S	C_p
GAS	Sw1	Re1

92.141

TOLUENE (METHYLBENZENE) **C7H8**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
LIQ	298.15	166.021	220.957	220.957	12.008	0.000	−53.870	12.008	113.959	−19.965
	300.00	166.021	221.984	220.960	12.315	0.307	−54.280	11.991	114.592	−19.952
	383.27	166.021	262.652	225.781	26.140	14.132	−74.527	10.253	143.252	−19.523

References

Phase	H / S	C_p	Remarks	
LIQ	Sw1	La1	La1	BPT= 383.27, L= 33.5 kJ

C7H8[g] TOLUENE (METHYLBENZENE) (GAS) 92.141

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	105.085	320.771	320.771	49.999	0.000	−45.639	49.999	122.191	−21.407
	300.00	105.751	321.423	320.773	50.194	0.195	−46.233	49.870	122.639	−21.353
	400.00	139.435	356.567	325.337	62.491	12.492	−80.136	43.284	147.914	−19.316
	500.00	168.769	390.910	335.036	77.936	27.937	−117.519	37.721	174.736	−18.255
	600.00	194.048	423.974	347.123	96.109	46.110	−158.275	33.116	202.587	−17.637
	700.00	215.568	455.549	360.376	116.620	66.621	−202.264	29.429	231.136	−17.248
	800.00	233.621	485.550	374.164	139.107	89.108	−249.332	26.637	260.152	−16.986
	900.00	248.503	513.955	388.133	163.239	113.240	−299.321	24.641	289.469	−16.800
	1000.00	260.508	540.783	402.070	188.712	138.713	−352.071	23.264	318.973	−16.661

References

Phase	H / S	C_p
GAS	Sw1	Re1

C7H14 CYCLOHEPTANE 98.188

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
LIQ	298.15	180.707	242.547	242.547	−158.072	0.000	−230.387	−158.072	54.329	−9.518
	300.00	180.707	243.664	242.550	−157.738	0.334	−230.837	−158.222	55.647	−9.689
	392.00	180.707	292.000	248.736	−141.113	16.959	−255.577	−166.902	122.391	−16.309

References

Phase	H / S	C_p	Remarks
LIQ	Sw1	La1	NBPT= 392

98.188 CYCLOHEPTANE (GAS) **C7H14**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	122.922	342.444	342.444	−119.328	0.000	−221.428	−119.328	63.288	−11.088
	300.00	123.949	343.208	342.447	−119.100	0.228	−222.062	−119.584	64.422	−11.217
	400.00	175.957	386.152	347.950	−104.048	15.280	−258.508	−132.132	127.723	−16.679
	500.00	221.378	430.413	360.012	−84.128	35.200	−299.334	−141.989	193.881	−20.255
	600.00	260.663	474.337	375.418	−59.976	59.352	−344.579	−149.403	261.790	−22.791
	700.00	294.267	517.112	392.621	−32.185	87.143	−394.163	−154.623	330.763	−24.682
	800.00	322.644	558.314	410.775	−1.297	118.031	−447.948	−157.873	400.348	−26.140
	900.00	346.246	597.723	429.375	32.185	151.513	−505.766	−159.442	470.236	−27.292
	1000.00	365.527	635.238	448.102	67.808	187.136	−567.430	−159.680	540.223	−28.218

References

Phase	H / S	C_p
GAS	Sw1	Re1

98.188 METHYLCYCLOHEXANE **C7H14**[M]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
LIQ	298.15	184.598	247.944	247.944	−190.163	0.000	−264.087	−190.163	20.629	−3.614
	300.00	184.598	249.086	247.947	−189.821	0.342	−264.547	−190.306	21.937	−3.820
	373.60	184.598	289.587	252.307	−176.235	13.928	−284.425	−196.798	74.716	−10.446

References

Phase	H / S	C_p	Remarks
LIQ	La1,Sw1	La1	La1 BPT= 373.6, L= 31.71 kJ

C7H14[M][g] METHYLCYCLOHEXANE (GAS) 98.188

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	134.828	343.449	343.449	−154.766	0.000	−257.165	−154.766	27.551	−4.827
	300.00	135.834	344.286	343.451	−154.516	0.250	−257.801	−155.000	28.683	−4.994
	400.00	186.618	390.483	349.407	−138.336	16.430	−294.529	−166.420	91.702	−11.975
	500.00	230.778	436.987	362.281	−117.413	37.353	−335.906	−175.274	157.309	−16.434
	600.00	268.876	482.518	378.545	−92.382	62.384	−381.893	−181.808	224.476	−19.542
	700.00	301.474	526.480	396.559	−63.821	90.945	−432.357	−186.259	292.569	−21.832
	800.00	329.132	568.594	415.451	−32.252	122.514	−487.127	−188.828	361.169	−23.582
	900.00	352.413	608.745	434.716	1.859	156.625	−546.011	−189.767	429.991	−24.956
	1000.00	371.878	646.913	454.044	38.103	192.869	−608.810	−189.384	498.843	−26.057

References

Phase	H / S	C_p
GAS	Sw1	Re1

C7H16 HEPTANE 100.204

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
LIQ	298.15	224.723	328.570	328.570	−224.388	0.000	−322.351	−224.388	1.327	−0.233
	300.00	224.723	329.960	328.574	−223.972	0.416	−322.960	−224.510	2.728	−0.475
	371.07	224.723	377.737	333.577	−208.001	16.387	−348.168	−229.967	57.135	−8.043

References

Phase	H / S	C_p	Remarks	
LIQ	La1/Sw1	La1	La1	BPT= 371.07, L= 31.67 kJ

100.204

HEPTANE (GAS) **C7H16**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	165.918	428.007	428.007	−187.778	0.000	−315.388	−187.778	8.290	−1.452
	300.00	166.803	429.036	428.010	−187.470	0.308	−316.181	−188.008	9.507	−1.655
	400.00	211.667	483.303	435.106	−168.499	19.279	−361.820	−199.543	77.138	−10.073
	500.00	251.070	534.865	449.947	−145.319	42.459	−412.751	−209.062	147.451	−15.404
	600.00	285.473	583.754	468.210	−118.452	69.326	−468.704	−216.689	219.500	−19.109
	700.00	315.333	630.057	488.054	−88.376	99.402	−529.416	−222.563	292.686	−21.840
	800.00	341.111	673.890	508.569	−55.521	132.257	−594.633	−226.799	366.600	−23.937
	900.00	363.265	715.379	529.264	−20.274	167.504	−664.116	−229.577	440.956	−25.592
	1000.00	382.254	754.662	549.858	17.026	204.804	−737.636	−231.141	515.554	−26.930
	1100.00	398.539	791.878	570.183	56.086	243.864	−814.979	−231.715	590.258	−28.029
	1200.00	412.576	827.172	590.141	96.659	284.437	−895.947	−231.487	664.979	−28.946
	1300.00	424.827	860.690	609.674	138.542	326.320	−980.354	−230.611	739.653	−29.720
	1400.00	435.750	892.579	628.752	181.580	369.358	−1068.031	−229.192	814.238	−30.380
	1500.00	445.804	922.989	647.362	225.663	413.441	−1158.821	−227.289	888.705	−30.947

References

Phase	H / S	C_p
GAS	Sw1	Re1

106.167

O−XYLENE (1,2−DIMETHYLBENZENE) **C8H10**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
LIQ	298.15	188.782	246.019	246.019	−24.393	0.000	−97.744	−24.393	110.760	−19.405
	300.00	188.782	247.187	246.023	−24.044	0.349	−98.200	−24.437	111.598	−19.431
	400.00	188.782	301.496	253.428	−5.166	19.227	−125.764	−28.384	157.462	−20.562
	417.03	188.782	309.367	255.552	−1.951	22.442	−130.966	−29.313	165.393	−20.716

References

Phase	H / S	C_p	Remarks	
LIQ	La1	La1	La1	BPT= 417.03, L= 36.8 kJ

C8H10[g] O–XYLENE (1,2–DIMETHYLBENZENE) (GAS) 106.167

Phase	T [K]	C_p [J / (K mol)]	S [J / (K mol)]	–(G–H298)/T [J / (K mol)]	H [kJ / mol]	H–H298 [kJ / mol]	G [kJ / mol]	ΔH_f [kJ / mol]	ΔG_f [kJ / mol]	log K_f [–]
GAS	298.15	133.204	352.863	352.863	18.995	0.000	–86.211	18.995	122.292	–21.425
	300.00	133.963	353.689	352.865	19.242	0.247	–86.865	18.849	122.934	–21.405
	400.00	172.240	397.596	358.593	34.596	15.601	–124.442	11.378	158.783	–20.735
	500.00	205.441	439.687	370.636	53.521	34.526	–166.323	5.040	196.391	–20.517
	600.00	234.016	479.736	385.511	75.530	56.535	–212.311	–0.238	235.174	–20.474
	700.00	258.419	517.693	401.708	100.185	81.190	–262.200	–4.498	274.761	–20.503
	800.00	279.099	553.589	418.470	127.090	108.095	–315.781	–7.749	314.888	–20.560
	900.00	296.508	587.497	435.385	155.896	136.901	–372.852	–10.078	355.367	–20.625
	1000.00	311.097	619.515	452.213	186.298	167.303	–433.218	–11.649	396.062	–20.688

References

Phase	H / S	C_p
GAS	Sw1	Re1

C8H10[E] ETHYLBENZENE 106.167

Phase	T [K]	C_p [J / (K mol)]	S [J / (K mol)]	–(G–H298)/T [J / (K mol)]	H [kJ / mol]	H–H298 [kJ / mol]	G [kJ / mol]	ΔH_f [kJ / mol]	ΔG_f [kJ / mol]	log K_f [–]
LIQ	298.15	185.895	255.182	255.182	–12.468	0.000	–88.551	–12.468	119.953	–21.015
	300.00	185.895	256.332	255.186	–12.124	0.344	–89.024	–12.517	120.774	–21.029
	400.00	185.895	309.811	262.477	6.465	18.933	–117.459	–16.753	165.767	–21.647
	408.83	185.895	313.870	263.544	8.107	20.575	–120.213	–17.252	169.801	–21.695

References

Phase	H / S	C_p	Remarks	
LIQ	La1	La1	La1	BPT= 408.83, L= 36.0 kJ

106.167

ETHYLBENZENE (GAS)

C8H10[E][g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	128.336	360.561	360.561	29.790	0.000	−77.711	29.790	130.792	−22.914
	300.00	129.176	361.357	360.563	30.028	0.238	−78.379	29.635	131.419	−22.882
	400.00	171.002	404.412	366.151	45.094	15.304	−116.670	21.876	166.555	−21.750
	500.00	206.333	446.479	378.035	64.012	34.222	−159.227	15.531	203.487	−21.258
	600.00	235.949	486.797	392.829	86.171	56.381	−205.907	10.402	241.579	−21.031
	700.00	260.630	525.080	409.012	111.037	81.247	−256.519	6.354	280.442	−20.927
	800.00	281.156	561.264	425.804	138.158	108.368	−310.853	3.319	319.817	−20.882
	900.00	298.307	595.399	442.770	167.156	137.366	−368.703	1.182	359.516	−20.866
	1000.00	312.863	627.601	459.659	197.733	167.943	−429.869	−0.213	399.411	−20.863

References

Phase	H / S	C_p
GAS	Sw1	Re1

110.199

OCT−1−YNE (GAS)

C8H14[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	177.836	446.124	446.124	82.425	0.000	−50.587	82.425	235.841	−41.318
	300.00	178.781	447.227	446.127	82.755	0.330	−51.413	82.255	236.793	−41.229
	400.00	222.185	504.907	453.698	102.909	20.484	−99.054	73.771	289.626	−37.821
	500.00	256.801	558.317	469.351	126.908	44.483	−152.250	66.663	344.437	−35.983
	600.00	286.579	607.829	488.354	154.110	71.685	−210.588	60.720	400.569	−34.873
	700.00	312.873	654.020	508.758	184.108	101.683	−273.706	55.928	457.606	−34.147
	800.00	336.248	697.355	529.652	216.587	134.162	−341.297	52.345	515.248	−33.642
	900.00	356.974	738.181	550.576	251.270	168.845	−413.093	49.944	573.266	−33.272
	1000.00	375.195	776.757	571.283	287.899	205.474	−488.858	48.593	631.495	−32.986
	1100.00	390.989	813.276	591.637	326.228	243.803	−568.376	48.138	689.814	−32.757
	1200.00	404.407	847.889	611.562	366.018	283.593	−651.450	48.415	748.140	−32.566
	1300.00	415.478	880.712	631.015	407.031	324.606	−737.894	49.251	806.420	−32.402
	1400.00	424.223	911.837	649.972	449.036	366.611	−827.536	50.472	864.620	−32.259
	1500.00	430.655	941.337	668.422	491.799	409.374	−920.208	51.903	922.724	−32.132
	1600.00	434.784	969.275	686.360	535.090	452.665	−1015.751	53.364	980.731	−32.018
	1700.00	436.616	995.701	703.787	578.679	496.254	−1114.012	54.669	1038.650	−31.914
	1800.00	436.157	1020.655	720.704	622.337	539.912	−1214.842	55.626	1096.502	−31.820

References

Phase	H / S	C_p	Remarks	
GAS	La1	La1	La1	NBPT= 399.4

C8H16 ETHYLCYCLOHEXANE 112.215

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
LIQ	298.15	211.794	280.914	280.914	−212.212	0.000	−295.966	−212.212	29.423	−5.155
	300.00	211.794	282.224	280.918	−211.820	0.392	−296.487	−212.374	30.923	−5.384
	400.00	211.794	343.153	289.225	−190.641	21.571	−327.902	−222.738	113.505	−14.822
	404.44	211.794	345.491	289.830	−189.700	22.512	−329.431	−223.260	117.240	−15.142

References

Phase	H / S	C_p	Remarks
LIQ	La1	La1	La1 BPT= 404.44, L= 34.9 kJ

C8H16[g] ETHYLCYCLOHEXANE (GAS) 112.215

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	158.658	382.694	382.694	−171.753	0.000	−285.853	−171.753	39.537	−6.927
	300.00	159.792	383.679	382.697	−171.458	0.295	−286.562	−172.012	40.848	−7.112
	400.00	217.006	437.673	389.672	−152.553	19.200	−327.622	−184.649	113.785	−14.859
	500.00	266.657	491.565	404.677	−128.309	43.444	−374.092	−194.436	189.583	−19.806
	600.00	309.404	544.060	423.558	−99.451	72.302	−425.888	−201.653	267.105	−23.254
	700.00	345.911	594.573	444.406	−66.636	105.117	−482.837	−206.566	345.650	−25.793
	800.00	376.836	642.840	466.218	−30.455	141.298	−544.727	−209.399	424.754	−27.734
	900.00	402.843	688.771	488.416	8.567	180.320	−611.327	−210.435	504.103	−29.257
	1000.00	424.592	732.375	510.651	49.971	221.724	−682.404	−210.015	583.485	−30.478

References

Phase	H / S	C_p
GAS	Sw1	Re1

114.231 OCTANE **C8H18**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
LIQ	298.15	254.094	361.205	361.205	−249.952	0.000	−357.645	−249.952	6.707	−1.175
	300.00	254.094	362.776	361.210	−249.482	0.470	−358.315	−250.089	8.300	−1.445
	397.95	254.094	434.569	370.846	−224.593	25.359	−397.530	−258.916	93.894	−12.324

References

Phase	H / S	C_p	Remarks
LIQ	La1,Sw1	La1	La1 BPT= 397.95, L= 34.9 kJ

114.231 OCTANE (GAS) **C8H18**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	193.833	466.835	466.835	−208.447	0.000	−347.634	−208.447	16.718	−2.929
	300.00	194.956	468.037	466.838	−208.087	0.360	−348.498	−208.694	18.116	−3.154
	400.00	247.149	531.609	475.153	−185.865	22.582	−398.508	−220.921	95.626	−12.487
	500.00	289.435	591.430	492.492	−158.978	49.469	−454.693	−230.987	175.969	−18.383
	600.00	326.088	647.511	513.704	−128.163	80.284	−516.669	−239.175	258.159	−22.475
	700.00	358.571	700.265	536.625	−93.898	114.549	−584.084	−245.577	341.578	−25.489
	800.00	387.497	750.072	560.222	−56.567	151.880	−656.624	−250.212	425.795	−27.802
	900.00	413.158	797.225	583.959	−16.508	191.939	−734.010	−253.186	510.490	−29.628
	1000.00	435.708	841.950	607.541	25.961	234.408	−815.988	−254.705	595.437	−31.102

References

Phase	H / S	C_p
GAS	Sw1	La1

C9H16[g] NON–1–YNE (GAS) 124.226

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	287.486	485.704	485.705	61.798	0.000	–83.015	61.798	244.087	–42.763
	300.00	288.086	487.485	485.710	62.330	0.532	–83.915	61.761	245.218	–42.696
	400.00	329.080	575.636	497.454	93.071	31.273	–137.184	59.921	306.672	–40.047
	500.00	379.937	654.405	521.071	128.465	66.667	–198.738	59.954	368.410	–38.487
	600.00	436.276	728.587	549.521	169.238	107.440	–267.914	63.073	429.867	–37.423
	700.00	496.597	800.324	580.246	215.852	154.054	–344.375	70.180	490.498	–36.601
	800.00	560.271	870.756	612.168	268.669	206.871	–427.936	82.059	549.793	–35.898
	900.00	627.000	940.570	644.782	328.008	266.210	–518.505	99.307	607.283	–35.246
	1000.00	696.625	1010.210	677.843	394.166	332.368	–616.045	122.361	662.544	–34.608

References

Phase	H / S	C_p	Remarks	
GAS	Sw1	La1	La1	NBPT= 424.0

C9H20 NONANE 128.258

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
LIQ	298.15	284.386	393.673	393.673	–275.475	0.000	–392.848	–275.475	12.177	–2.133
	300.00	284.386	395.432	393.678	–274.949	0.526	–393.578	–275.625	13.963	–2.431
	400.00	284.386	477.245	404.833	–246.510	28.965	–437.408	–285.578	111.902	–14.613
	423.43	284.386	493.433	409.292	–239.847	35.628	–448.781	–288.341	135.263	–16.686

References

Phase	H / S	C_p	Remarks	
LIQ	Sw1	La1	La1	BPT= 423.43, L= 37.7 kJ

128.258

NONANE (GAS) **C9H20**[g]

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[–]
GAS	298.15	217.432	505.788	505.788	–229.032	0.000	–379.833	–229.032	25.193	–4.414
	300.00	218.683	507.137	505.792	–228.629	0.403	–380.770	–229.305	26.772	–4.661
	400.00	276.734	578.381	515.113	–203.725	25.307	–435.077	–242.793	114.233	–14.917
	500.00	323.577	645.310	534.534	–173.644	55.388	–496.299	–253.919	204.822	–21.398
	600.00	364.020	707.961	558.274	–139.220	89.812	–563.996	–263.007	297.456	–25.896
	700.00	399.710	766.810	583.904	–100.998	128.034	–637.765	–270.167	391.459	–29.211
	800.00	431.336	822.291	610.268	–59.413	169.619	–717.246	–275.426	486.358	–31.756
	900.00	459.226	874.741	636.767	–14.855	214.177	–802.122	–278.908	581.807	–33.767
	1000.00	483.554	924.415	663.070	32.313	261.345	–892.102	–280.851	677.560	–35.392

References

Phase	H / S	C_p
GAS	Sw1	La1

142.285

DECANE **C10H22**

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[–]
LIQ	298.15	314.511	425.889	425.889	–301.039	0.000	–428.018	–301.039	17.682	–3.098
	300.00	314.511	427.835	425.895	–300.457	0.582	–428.808	–301.202	19.660	–3.423
	400.00	314.511	518.314	438.232	–269.006	32.033	–476.332	–312.086	128.154	–16.735
	446.83	314.511	553.135	448.483	–254.277	46.762	–501.435	–318.299	180.039	–21.047

References

Phase	H / S	C_p	Remarks	
LIQ	La1	La1	La1,e	BPT= 446.83, L= 51.9 kJ

$C_{10}H_{22}$[g] DECANE (GAS) 142.285

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	241.726	544.741	544.741	–249.659	0.000	–412.073	–249.659	33.626	–5.891
	300.00	243.117	546.240	544.745	–249.211	0.448	–413.083	–249.956	35.385	–6.161
	400.00	307.651	625.443	555.108	–221.525	28.134	–471.702	–264.605	132.784	–17.340
	500.00	359.807	699.856	576.699	–188.080	61.579	–538.008	–276.621	233.572	–24.401
	600.00	404.948	769.535	603.094	–149.794	99.865	–611.515	–286.357	336.561	–29.300
	700.00	444.915	835.019	631.595	–107.262	142.397	–691.776	–293.923	441.009	–32.908
	800.00	480.473	896.797	660.921	–60.958	188.701	–778.396	–299.339	546.394	–35.676
	900.00	511.991	955.247	690.406	–11.302	238.357	–871.024	–302.731	652.334	–37.860
	1000.00	539.661	1010.656	719.685	41.312	290.971	–969.344	–304.350	758.554	–39.623

References

Phase	H / S	C_p
GAS	Sw1	La1

$CHCl_3$[g] TRICHLOROMETHANE (GAS) 119.377

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	65.806	295.751	295.751	–101.253	0.000	–189.431	–101.253	–68.455	11.993
	300.00	65.986	296.159	295.752	–101.131	0.122	–189.979	–101.268	–68.252	11.884
	400.00	74.489	316.361	298.449	–94.088	7.165	–220.633	–101.916	–57.140	7.462
	500.00	80.910	333.707	303.807	–86.303	14.950	–253.156	–102.279	–45.899	4.795
	600.00	85.647	348.900	310.083	–77.962	23.291	–287.303	–102.436	–34.605	3.013
	700.00	89.100	362.376	316.609	–69.216	32.037	–322.879	–102.452	–23.297	1.738
	800.00	91.667	374.449	323.098	–60.172	41.081	–359.731	–102.366	–11.994	0.783
	900.00	93.748	385.369	329.420	–50.899	50.354	–397.731	–102.202	–0.707	0.041
	1000.00	95.742	395.348	335.520	–41.425	59.828	–436.773	–101.961	10.558	–0.551

References

Phase	H / S	C_p
GAS	Sw1	Re1

84.932

DICHLOROMETHANE (GAS) **CH2Cl2**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	50.870	270.287	270.287	−95.521	0.000	−176.107	−95.521	−68.911	12.073
	300.00	51.080	270.602	270.288	−95.427	0.094	−176.607	−95.559	−68.746	11.970
	400.00	59.931	286.596	272.409	−89.846	5.675	−204.485	−97.388	−59.522	7.773
	500.00	66.685	300.718	276.686	−83.505	12.016	−233.864	−98.872	−49.877	5.211
	600.00	72.328	313.390	281.765	−76.546	18.975	−264.580	−100.057	−39.962	3.479
	700.00	77.006	324.903	287.118	−69.072	26.449	−296.503	−100.976	−29.870	2.229
	800.00	80.852	335.445	292.509	−61.172	34.349	−329.528	−101.658	−19.663	1.284
	900.00	84.054	345.158	297.826	−52.923	42.598	−363.565	−102.142	−9.383	0.545
	1000.00	86.840	354.161	303.015	−44.375	51.146	−398.536	−102.459	0.942	−0.049
	1100.00	89.243	362.554	308.051	−35.568	59.953	−434.377	−102.633	11.292	−0.536
	1200.00	91.274	370.408	312.923	−26.539	68.982	−471.029	−102.692	21.652	−0.942
	1300.00	93.021	377.785	317.632	−17.322	78.199	−508.442	−102.660	32.013	−1.286
	1400.00	94.539	384.735	322.179	−7.943	87.578	−546.572	−102.555	42.369	−1.581
	1500.00	95.868	391.304	326.570	1.579	97.100	−585.377	−102.390	52.716	−1.836
	1600.00	97.035	397.529	330.813	11.225	106.746	−624.821	−102.174	63.049	−2.058
	1700.00	98.059	403.443	334.912	20.981	116.502	−664.872	−101.919	73.368	−2.254
	1800.00	98.954	409.074	338.877	30.833	126.354	−705.500	−101.632	83.671	−2.428
	1900.00	99.730	414.445	342.714	40.768	136.289	−746.678	−101.322	93.957	−2.583
	2000.00	100.397	419.578	346.430	50.775	146.296	−788.381	−100.996	104.226	−2.722

References

Phase	H / S	C_p
GAS	Ja1	Ja1

50.488

CHLOROMETHANE (GAS) **CH3Cl**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	40.693	234.581	234.581	−86.316	0.000	−156.256	−86.316	−62.840	11.009
	300.00	40.838	234.833	234.582	−86.241	0.075	−156.690	−86.368	−62.694	10.916
	400.00	48.347	247.627	236.275	−81.775	4.541	−180.826	−89.032	−54.393	7.103
	500.00	55.139	259.158	239.716	−76.595	9.721	−206.174	−91.352	−45.458	4.749
	600.00	61.232	269.760	243.852	−70.771	15.545	−232.627	−93.319	−36.088	3.142
	700.00	66.639	279.614	248.265	−64.372	21.944	−260.101	−94.944	−26.417	1.971
	800.00	71.377	288.829	252.766	−57.465	28.851	−288.528	−96.243	−16.535	1.080
	900.00	75.461	297.478	257.258	−50.118	36.198	−317.848	−97.253	−6.508	0.378
	1000.00	78.906	305.613	261.691	−42.394	43.922	−348.007	−98.025	3.619	−0.189

References

Phase	H / S	C_p
GAS	Sw1	Re1

C2H3Cl[g] CHLOROETHENE (GAS) 62.499

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	53.728	264.036	264.036	35.146	0.000	−43.576	35.146	51.551	−9.032
	300.00	53.956	264.369	264.037	35.246	0.100	−44.065	35.103	51.653	−8.994
	400.00	65.154	281.474	266.294	41.218	6.072	−71.371	32.909	57.510	−7.510
	500.00	74.427	297.042	270.910	48.212	13.066	−100.309	31.071	63.880	−6.674
	600.00	82.061	311.310	276.471	56.049	20.903	−130.737	29.536	70.591	−6.145
	700.00	88.341	324.447	282.399	64.579	29.433	−162.533	28.265	77.537	−5.786
	800.00	93.555	336.593	288.424	73.682	38.536	−195.593	27.238	84.649	−5.527
	900.00	97.988	347.875	294.410	83.264	48.118	−229.823	26.430	91.876	−5.332
	1000.00	101.926	358.406	300.289	93.263	58.117	−265.143	25.814	99.182	−5.181

References

Phase	H / S	C_p
GAS	Sw1	Re1

C2H5Cl[g] CHLOROETHANE (GAS) 64.514

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	62.229	275.961	275.961	−111.713	0.000	−193.991	−111.713	−59.901	10.494
	300.00	62.535	276.346	275.962	−111.598	0.115	−194.502	−111.794	−59.579	10.374
	400.00	77.762	296.482	278.604	−104.562	7.151	−223.155	−115.831	−41.546	5.425
	500.00	90.643	315.259	284.079	−96.123	15.590	−253.753	−119.147	−22.577	2.359
	600.00	101.511	332.773	290.752	−86.500	25.213	−286.164	−121.824	−3.002	0.261
	700.00	110.697	349.131	297.937	−75.877	35.836	−320.269	−123.941	16.977	−1.267
	800.00	118.534	364.437	305.303	−64.406	47.307	−355.955	−125.552	37.224	−2.430
	900.00	125.356	378.800	312.680	−52.204	59.509	−393.125	−126.715	57.645	−3.346
	1000.00	131.495	392.330	319.975	−39.357	72.356	−431.688	−127.486	78.174	−4.083

References

Phase	H / S	C_p	Remarks
GAS	Sw1	Re1	NBPT= 285.4

29.018 OXOMETHYL (GAS) **CHO**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	34.593	224.623	224.623	43.514	0.000	−23.457	43.514	28.318	−4.961
	300.00	34.624	224.837	224.624	43.578	0.064	−23.873	43.508	28.223	−4.914
	400.00	36.524	235.047	226.003	47.132	3.618	−46.887	43.086	23.187	−3.028
	500.00	38.731	243.431	228.673	50.893	7.379	−70.823	42.526	18.274	−1.909
	600.00	40.963	250.691	231.751	54.878	11.364	−95.536	41.887	13.483	−1.174
	700.00	43.060	257.166	234.927	59.081	15.567	−120.935	41.215	8.802	−0.657
	800.00	44.952	263.042	238.080	63.484	19.970	−146.950	40.549	4.217	−0.275
	900.00	46.615	268.434	241.157	68.064	24.550	−173.527	39.906	−0.285	0.017
	1000.00	48.054	273.422	244.137	72.799	29.285	−200.623	39.289	−4.718	0.246
	1100.00	49.283	278.061	247.013	77.668	34.154	−228.200	38.695	−9.089	0.432
	1200.00	50.328	282.396	249.783	82.650	39.136	−256.225	38.118	−13.408	0.584
	1300.00	51.216	286.460	252.449	87.728	44.214	−284.670	37.553	−17.679	0.710
	1400.00	51.980	290.284	255.017	92.889	49.375	−313.509	36.995	−21.906	0.817
	1500.00	52.651	293.894	257.489	98.121	54.607	−342.720	36.444	−26.094	0.909
	1600.00	53.243	297.311	259.872	103.416	59.902	−372.282	35.896	−30.245	0.987
	1700.00	53.750	300.555	262.171	108.767	65.253	−402.176	35.350	−34.363	1.056
	1800.00	54.189	303.640	264.390	114.164	70.650	−432.387	34.802	−38.447	1.116
	1900.00	54.574	306.580	266.533	119.603	76.089	−462.899	34.250	−42.502	1.168
	2000.00	54.916	309.388	268.606	125.078	81.564	−493.699	33.691	−46.527	1.215
	2100.00	55.222	312.075	270.613	130.585	87.071	−524.773	33.123	−50.524	1.257
	2200.00	55.499	314.651	272.556	136.121	92.607	−556.110	32.546	−54.494	1.294
	2300.00	55.752	317.123	274.441	141.684	98.170	−587.700	31.959	−58.437	1.327
	2400.00	55.985	319.501	276.269	147.271	103.757	−619.532	31.361	−62.354	1.357
	2500.00	56.201	321.791	278.044	152.880	109.366	−651.597	30.753	−66.247	1.384
	2600.00	56.402	323.999	279.770	158.511	114.997	−683.887	30.132	−70.115	1.409
	2700.00	56.591	326.131	281.447	164.160	120.646	−716.394	29.501	−73.958	1.431
	2800.00	56.769	328.193	283.080	169.828	126.314	−749.111	28.858	−77.778	1.451
	2900.00	56.938	330.188	284.671	175.514	132.000	−782.030	28.203	−81.575	1.469
	3000.00	57.100	332.121	286.220	181.216	137.702	−815.146	27.537	−85.349	1.486

References

Phase	H / S	C_p
GAS	Ja1	Ja1

CH2O[g] FORMALDEHYDE (GAS) 30.026

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	35.396	218.765	218.765	−115.901	0.000	−181.126	−115.901	−109.870	19.249
	300.00	35.448	218.984	218.766	−115.835	0.066	−181.531	−115.932	−109.832	19.124
	400.00	39.250	229.667	220.197	−112.113	3.788	−203.980	−117.638	−107.542	14.044
	500.00	43.771	238.908	223.033	−107.963	7.938	−227.417	−119.271	−104.827	10.951
	600.00	48.209	247.285	226.387	−103.362	12.539	−251.733	−120.759	−101.796	8.862
	700.00	52.302	255.029	229.932	−98.333	17.568	−276.853	−122.074	−98.529	7.352
	800.00	55.966	262.257	233.526	−92.916	22.985	−302.722	−123.202	−95.086	6.208
	900.00	59.191	269.039	237.099	−87.154	28.747	−329.290	−124.150	−91.513	5.311
	1000.00	61.994	275.424	240.615	−81.092	34.809	−356.516	−124.942	−87.843	4.588
	1100.00	64.413	281.449	244.056	−74.768	41.133	−384.363	−125.601	−84.100	3.994
	1200.00	66.491	287.145	247.412	−68.221	47.680	−412.795	−126.151	−80.302	3.495
	1300.00	68.277	292.540	250.678	−61.480	54.421	−441.782	−126.614	−76.462	3.072
	1400.00	69.823	297.657	253.852	−54.573	61.328	−471.294	−127.008	−72.589	2.708
	1500.00	71.183	302.522	256.936	−47.522	68.379	−501.305	−127.344	−68.690	2.392
	1600.00	72.347	307.154	259.931	−40.344	75.557	−531.790	−127.635	−64.770	2.115
	1700.00	73.362	311.571	262.840	−33.057	82.844	−562.728	−127.892	−60.833	1.869
	1800.00	74.249	315.790	265.665	−25.676	90.225	−594.098	−128.122	−56.881	1.651
	1900.00	75.026	319.826	268.410	−18.211	97.690	−625.880	−128.335	−52.917	1.455
	2000.00	75.711	323.692	271.078	−10.674	105.227	−658.058	−128.536	−48.943	1.278
	2100.00	76.317	327.401	273.673	−3.072	112.829	−690.614	−128.731	−44.958	1.118
	2200.00	76.854	330.964	276.196	4.587	120.488	−723.533	−128.925	−40.965	0.973
	2300.00	77.333	334.391	278.653	12.297	128.198	−756.802	−129.121	−36.962	0.839
	2400.00	77.761	337.691	281.044	20.052	135.953	−790.407	−129.321	−32.951	0.717
	2500.00	78.145	340.874	283.374	27.848	143.749	−824.336	−129.529	−28.931	0.604
	2600.00	78.490	343.945	285.645	35.680	151.581	−858.578	−129.746	−24.903	0.500
	2700.00	78.803	346.914	287.860	43.545	159.446	−893.122	−129.975	−20.866	0.404
	2800.00	79.085	349.785	290.020	51.440	167.341	−927.957	−130.216	−16.821	0.314
	2900.00	79.342	352.564	292.129	59.361	175.262	−963.076	−130.471	−12.767	0.230
	3000.00	79.575	355.258	294.189	67.307	183.208	−998.467	−130.742	−8.703	0.152

References

Phase	H / S	C_p	Remarks	
GAS	Ja1	Ja1	La1	BPT= 253.6, L= 23.3 kJ

CH2O2 FORMIC ACID 46.026

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
LIQ	298.15	99.161	128.951	128.951	−424.760	0.000	−463.207	−424.760	−361.368	63.310
	300.00	99.161	129.564	128.953	−424.577	0.183	−463.446	−424.700	−360.975	62.851
	400.00	99.161	158.091	132.842	−414.660	10.100	−477.897	−421.698	−340.198	44.425

References

Phase	H / S	C_p	Remarks	
LIQ	Sw1	La1	La1	BPT= 373.0, L= 22.3 kJ

46.026

FORMIC ACID (GAS) **CH2O2**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	45.224	248.848	248.848	−378.610	0.000	−452.804	−378.610	−350.966	61.488
	300.00	45.392	249.128	248.849	−378.526	0.084	−453.265	−378.650	−350.794	61.079
	400.00	53.823	263.372	250.734	−373.555	5.055	−478.904	−380.593	−341.205	44.557
	500.00	61.056	276.180	254.563	−367.802	10.808	−505.892	−382.152	−331.170	34.597
	600.00	67.212	287.871	259.154	−361.380	17.230	−534.102	−383.399	−320.852	27.933
	700.00	72.413	298.634	264.036	−354.391	24.219	−563.435	−384.381	−310.346	23.158
	800.00	76.779	308.597	268.991	−346.925	31.685	−593.803	−385.128	−299.717	19.569
	900.00	80.432	317.858	273.912	−339.059	39.551	−625.131	−385.675	−289.005	16.773
	1000.00	83.492	326.495	278.743	−330.858	47.752	−657.353	−386.059	−278.242	14.534

References

Phase	H / S	C_p
GAS	Sw1	Re1

32.042

METHANOL **CH4O**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
LIQ	298.15	81.588	126.775	126.775	−238.572	0.000	−276.370	−238.572	−166.152	29.109
	300.00	81.588	127.280	126.777	−238.421	0.151	−276.605	−238.571	−165.702	28.851
	400.00	81.588	150.751	129.977	−230.262	8.310	−290.563	−238.746	−141.398	18.465

References

Phase	H / S	C_p	Remarks	
LIQ	Sw1	La1	La1	BPT= 337.4, L= 35.39 kJ

CH4O[g] METHANOL (GAS) 32.042

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	43.812	239.811	239.811	−201.167	0.000	−272.667	−201.167	−162.448	28.460
	300.00	43.958	240.082	239.812	−201.086	0.081	−273.110	−201.236	−162.208	28.243
	400.00	51.801	253.804	241.630	−196.297	4.870	−297.819	−204.781	−148.654	19.412
	500.00	59.477	266.193	245.321	−190.731	10.436	−323.827	−207.921	−134.250	14.025
	600.00	66.815	277.692	249.768	−184.413	16.754	−351.028	−210.621	−119.255	10.382
	700.00	73.645	288.512	254.538	−177.385	23.782	−379.343	−212.874	−103.843	7.749
	800.00	79.794	298.756	259.430	−169.707	31.460	−408.711	−214.694	−88.138	5.755
	900.00	85.093	308.469	264.344	−161.455	39.712	−439.077	−216.126	−72.229	4.192
	1000.00	89.370	317.666	269.221	−152.722	48.445	−470.388	−217.252	−56.178	2.934

References

Phase	H / S	C_p
GAS	Sw1	Re1

C2H2O[g] ETHENONE (KETENE) (GAS) 42.037

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	46.275	241.903	241.903	−61.086	0.000	−133.209	−61.086	−60.242	10.554
	300.00	46.472	242.190	241.904	−61.000	0.086	−133.657	−61.112	−60.236	10.488
	400.00	56.256	256.937	243.848	−55.850	5.236	−158.625	−62.428	−59.739	7.801
	500.00	64.520	270.405	247.832	−49.800	11.286	−185.002	−63.492	−58.939	6.157
	600.00	71.426	282.798	252.641	−42.992	18.094	−212.670	−64.353	−57.945	5.045
	700.00	77.135	294.251	257.778	−35.554	25.532	−241.530	−65.037	−56.820	4.240
	800.00	81.809	304.867	263.009	−27.599	33.487	−271.493	−65.551	−55.609	3.631
	900.00	85.611	314.730	268.214	−19.222	41.864	−302.479	−65.917	−54.343	3.154
	1000.00	88.701	323.915	273.330	−10.501	50.585	−334.416	−66.169	−53.043	2.771

References

Phase	H / S	C_p
GAS	Sw1	Re1

44.053

ACETALDEHYDE (GAS) **C2H4O[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	53.702	264.329	264.329	−166.356	0.000	−245.166	−166.356	−133.236	23.342
	300.00	53.940	264.662	264.330	−166.256	0.100	−245.655	−166.422	−133.030	23.163
	400.00	65.992	281.866	266.594	−160.247	6.109	−272.994	−169.784	−121.380	15.851
	500.00	76.603	297.757	271.257	−153.106	13.250	−301.985	−172.680	−108.935	11.380
	600.00	85.917	312.565	276.922	−144.970	21.386	−332.509	−175.142	−95.948	8.353
	700.00	94.075	326.436	283.015	−135.961	30.395	−364.467	−177.193	−82.581	6.162
	800.00	101.220	339.475	289.266	−126.189	40.167	−397.769	−178.842	−68.948	4.502
	900.00	107.495	351.767	295.534	−115.746	50.610	−432.337	−180.117	−55.131	3.200
	1000.00	113.043	363.386	301.744	−104.714	61.642	−468.100	−181.062	−41.190	2.152

References

Phase	H / S	C_p	Remarks
GAS	Sw1	Re1	NBPT= 293.6

60.053

ACETIC ACID **C2H4O2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
LIQ	298.15	123.386	159.829	159.829	−484.089	0.000	−531.742	−484.089	−389.230	68.191
	300.00	123.386	160.592	159.831	−483.861	0.228	−532.038	−484.053	−388.641	67.668
	389.00	123.386	192.647	163.831	−472.879	11.210	−547.819	−482.698	−360.535	48.412

References

Phase	H / S	C_p	Remarks
LIQ	Sw1	La1	La1 BPT= 389.0, L= 23.8 kJ

C2H4O2[g] ACETIC ACID (GAS) 60.053

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	66.508	282.613	282.613	−434.843	0.000	−519.104	−434.843	−376.592	65.977
	300.00	66.809	283.025	282.614	−434.720	0.123	−519.627	−434.912	−376.230	65.508
	400.00	81.844	304.363	285.422	−427.266	7.577	−549.012	−438.316	−356.137	46.507
	500.00	94.563	324.033	291.203	−418.428	16.415	−580.445	−441.044	−335.264	35.025
	600.00	105.261	342.248	298.212	−408.421	26.422	−613.770	−443.216	−313.895	27.327
	700.00	114.236	359.168	305.726	−397.433	37.410	−648.851	−444.914	−292.202	21.804
	800.00	121.784	374.929	313.402	−385.622	49.221	−685.565	−446.193	−270.294	17.648
	900.00	128.202	389.653	321.066	−373.114	61.729	−723.802	−447.106	−248.248	14.408
	1000.00	133.788	403.456	328.622	−360.009	74.834	−763.465	−447.708	−226.118	11.811

References

Phase	H / S	C_p
GAS	Sw1	Re1

C2H6O ETHANOL 46.069

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
LIQ	298.15	111.420	160.666	160.666	−276.981	0.000	−324.883	−276.981	−173.991	30.483
	300.00	111.420	161.355	160.668	−276.775	0.206	−325.181	−276.994	−173.352	30.183
	351.30	111.420	178.943	162.086	−271.059	5.922	−333.922	−277.479	−155.594	23.135

References

Phase	H / S	C_p	Remarks	
LIQ	Sw1	La1	La1	BPT= 351.3, L= 38.7 kJ

46.069

ETHANOL (GAS) **C2H6O[g]**

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	65.374	282.697	282.697	−234.806	0.000	−319.092	−234.806	−168.200	29.468
	300.00	65.677	283.102	282.698	−234.685	0.121	−319.615	−234.904	−167.786	29.214
	400.00	81.252	304.169	285.465	−227.325	7.481	−348.992	−239.821	−144.652	18.890
	500.00	95.182	323.826	291.193	−218.489	16.317	−380.402	−243.945	−120.366	12.575
	600.00	107.476	342.292	298.186	−208.343	26.463	−413.718	−247.326	−95.321	8.298
	700.00	118.143	359.681	305.741	−197.048	37.758	−448.825	−250.029	−69.764	5.206
	800.00	127.191	376.065	313.518	−184.768	50.038	−485.620	−252.123	−43.862	2.864
	900.00	134.627	391.491	321.333	−171.664	63.142	−524.006	−253.711	−17.730	1.029
	1000.00	140.461	405.992	329.082	−157.896	76.910	−563.888	−254.924	8.558	−0.447

References

Phase	H / S	C_p
GAS	Sw1	Re1

58.080

ACETONE **C3H6O**

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
LIQ	298.15	125.018	200.414	200.414	−248.111	0.000	−307.864	−248.111	−155.261	27.201
	300.00	125.018	201.187	200.416	−247.880	0.231	−308.236	−248.114	−154.685	26.933
	328.90	125.018	212.685	200.997	−244.267	3.844	−314.219	−248.231	−145.680	23.136

References

Phase	H / S	C_p	Remarks	
LIQ	Sw1	La1	La1	BPT= 328.9, L= 29.08 kJ

C3H6O[g] ACETONE (GAS) 58.080

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	73.350	295.040	295.040	−217.568	0.000	−305.534	−217.568	−152.931	26.793
	300.00	73.704	295.494	295.041	−217.432	0.136	−306.080	−217.667	−152.529	26.558
	400.00	91.735	319.217	298.154	−209.143	8.425	−336.829	−222.692	−130.040	16.982
	500.00	107.752	341.444	304.612	−199.152	18.416	−369.874	−226.992	−106.365	11.112
	600.00	121.876	362.366	312.511	−187.655	29.913	−405.075	−230.603	−81.889	7.129
	700.00	134.229	382.103	321.057	−174.836	42.732	−442.308	−233.559	−56.861	4.243
	800.00	144.934	400.743	329.863	−160.864	56.704	−481.459	−235.886	−31.453	2.054
	900.00	154.113	418.358	338.727	−145.900	71.668	−522.422	−237.646	−5.787	0.336
	1000.00	161.887	435.010	347.530	−130.089	87.479	−565.098	−238.935	20.048	−1.047

References

Phase	H / S	C_p
GAS	Sw1	Re1

C6H6O PHENOL 94.113

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	143.720	144.013	144.013	−165.017	0.000	−207.955	−165.017	−50.217	8.798
	300.00	143.720	144.902	144.016	−164.751	0.266	−208.222	−165.033	−49.504	8.619
	314.00	143.720	151.457	144.203	−162.739	2.278	−210.297	−165.187	−44.109	7.338

References

Phase	H / S	C_p	Remarks	
SOL	Sw1	La1,e	La1	MPT= 314.00, L= 11.59 kJ / BPT= 454.3, L= 47.32 kJ

94.113 PHENOL (GAS) **C6H6O[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	103.603	315.709	315.709	−96.358	0.000	−190.487	−96.358	−32.749	5.737
	300.00	104.251	316.351	315.711	−96.166	0.192	−191.071	−96.448	−32.354	5.633
	400.00	135.918	350.834	320.198	−84.104	12.254	−224.437	−100.811	−10.302	1.345
	500.00	161.598	384.024	329.672	−69.182	27.176	−261.194	−104.173	12.733	−1.330
	600.00	182.207	415.379	341.371	−51.953	44.405	−301.180	−106.793	36.371	−3.166
	700.00	198.661	444.749	354.065	−32.879	63.479	−344.203	−108.829	60.400	−4.507
	800.00	211.876	472.170	367.134	−12.329	84.029	−390.065	−110.350	84.685	−5.529
	900.00	222.767	497.773	380.243	9.419	105.777	−438.577	−111.425	109.133	−6.334
	1000.00	232.250	521.743	393.207	32.178	128.536	−489.565	−112.124	133.680	−6.983

References

Phase	H / S	C_p
GAS	Sw1	Re1

110.225 CARBONOTRITHIONIC ACID **CH2S3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
LIQ	298.15	148.532	223.007	223.007	25.104	0.000	−41.386	25.104	27.961	−4.899
	300.00	148.532	223.926	223.010	25.379	0.275	−41.799	25.183	27.978	−4.871
	400.00	148.532	266.656	228.836	40.232	15.128	−66.430	22.350	28.578	−3.732

References

Phase	H / S	C_p
LIQ	Sw1	Sw1

CN[g] CYANOGEN (GAS) 26.018

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	29.154	202.657	202.657	435.136	0.000	374.714	435.136	404.989	–70.952
	300.00	29.159	202.837	202.657	435.190	0.054	374.339	435.147	404.802	–70.482
	400.00	29.410	211.257	203.804	438.117	2.981	353.614	435.579	394.614	–51.531
	500.00	29.935	217.871	205.978	441.082	5.946	332.147	435.743	384.349	–40.153
	600.00	30.653	223.390	208.433	444.111	8.975	310.076	435.699	374.071	–32.566
	700.00	31.424	228.173	210.918	447.214	12.078	287.493	435.504	363.813	–27.148
	800.00	32.169	232.419	213.345	450.395	15.259	264.460	435.205	353.591	–23.087
	900.00	32.850	236.248	215.681	453.646	18.510	241.023	434.836	343.411	–19.931
	1000.00	33.456	239.741	217.915	456.962	21.826	217.221	434.412	333.275	–17.409
	1100.00	33.988	242.955	220.047	460.335	25.199	193.084	433.947	323.184	–15.347
	1200.00	34.458	245.933	222.082	463.758	28.622	168.638	433.450	313.136	–13.630
	1300.00	34.880	248.708	224.024	467.225	32.089	143.905	432.929	303.131	–12.180
	1400.00	35.273	251.307	225.881	470.733	35.597	118.902	432.391	293.166	–10.938
	1500.00	35.657	253.754	227.659	474.279	39.143	93.648	431.844	283.241	–9.863
	1600.00	35.996	256.066	229.362	477.861	42.725	68.156	431.292	273.352	–8.924
	1700.00	36.367	258.259	230.998	481.479	46.343	42.439	430.744	263.497	–8.096
	1800.00	36.762	260.349	232.571	485.136	50.000	16.508	430.205	253.675	–7.361
	1900.00	37.173	262.347	234.086	488.832	53.696	–9.628	429.682	243.882	–6.705
	2000.00	37.597	264.265	235.547	492.571	57.435	–35.959	429.179	234.116	–6.114
	2100.00	38.030	266.110	236.959	496.352	61.216	–62.478	428.699	224.375	–5.581
	2200.00	38.469	267.889	238.325	500.177	65.041	–89.179	428.244	214.656	–5.097
	2300.00	38.912	269.609	239.648	504.046	68.910	–116.054	427.817	204.957	–4.655
	2400.00	39.357	271.274	240.931	507.959	72.823	–143.099	427.420	195.276	–4.250
	2500.00	39.802	272.890	242.177	511.917	76.781	–170.307	427.054	185.611	–3.878
	2600.00	40.248	274.460	243.389	515.920	80.784	–197.675	426.720	175.960	–3.535
	2700.00	40.692	275.987	244.568	519.967	84.831	–225.198	426.418	166.322	–3.218
	2800.00	41.134	277.475	245.717	524.058	88.922	–252.871	426.150	156.693	–2.923
	2900.00	41.574	278.926	246.837	528.194	93.058	–280.691	425.915	147.074	–2.649
	3000.00	42.010	280.343	247.930	532.373	97.237	–308.655	425.713	137.462	–2.393

References

Phase	H / S	C_p
GAS	Ja1	Ja1

40.024 CARBON NITRIDE (NCN RADICAL) (GAS) **CN2**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	42.221	226.213	226.213	472.792	0.000	405.347	472.792	464.186	−81.324
	300.00	42.270	226.474	226.214	472.870	0.078	404.928	472.800	464.133	−80.813
	400.00	46.024	239.124	227.913	477.277	4.485	381.627	473.252	461.177	−60.224
	500.00	49.480	249.783	231.248	482.060	9.268	357.168	473.765	458.100	−47.857
	600.00	52.057	259.044	235.125	487.143	14.351	331.717	474.284	454.917	−39.604
	700.00	53.971	267.219	239.138	492.449	19.657	305.396	474.770	451.651	−33.703
	800.00	55.428	274.525	243.113	497.922	25.130	278.302	475.210	448.317	−29.272
	900.00	56.565	281.122	246.975	503.524	30.732	250.514	475.602	444.932	−25.823
	1000.00	57.470	287.130	250.695	509.227	36.435	222.097	475.946	441.505	−23.062
	1100.00	58.203	292.643	254.261	515.012	42.220	193.105	476.245	438.046	−20.801
	1200.00	58.802	297.734	257.675	520.863	48.071	163.582	476.502	434.562	−18.916
	1300.00	59.296	302.461	260.940	526.769	53.977	133.570	476.722	431.057	−17.320
	1400.00	59.704	306.871	264.065	532.720	59.928	103.101	476.910	427.538	−15.952
	1500.00	60.042	311.002	267.058	538.708	65.916	72.205	477.070	424.005	−14.765
	1600.00	60.322	314.886	269.927	544.726	71.934	40.909	477.205	420.463	−13.727
	1700.00	60.553	318.550	272.681	550.770	77.978	9.235	477.320	416.913	−12.810
	1800.00	60.743	322.017	275.326	556.835	84.043	−22.795	477.416	413.357	−11.995
	1900.00	60.900	325.305	277.871	562.918	90.126	−55.162	477.494	409.796	−11.266
	2000.00	61.029	328.433	280.321	569.015	96.223	−87.851	477.555	406.231	−10.610
	2100.00	61.135	331.413	282.684	575.123	102.331	−120.844	477.599	402.664	−10.016
	2200.00	61.224	334.259	284.964	581.241	108.449	−154.129	477.627	399.095	−9.476
	2300.00	61.300	336.982	287.167	587.367	114.575	−187.692	477.641	395.525	−8.983
	2400.00	61.367	339.592	289.297	593.501	120.709	−221.521	477.642	391.954	−8.531
	2500.00	61.429	342.099	291.359	599.640	126.848	−255.607	477.629	388.384	−8.115
	2600.00	61.491	344.509	293.358	605.786	132.994	−289.938	477.605	384.815	−7.731
	2700.00	61.556	346.831	295.295	611.939	139.147	−324.506	477.571	381.247	−7.376
	2800.00	61.628	349.071	297.176	618.098	145.306	−359.301	477.528	377.680	−7.046
	2900.00	61.711	351.235	299.003	624.265	151.473	−394.317	477.478	374.115	−6.739
	3000.00	61.807	353.329	300.779	630.441	157.649	−429.546	477.423	370.551	−6.452

References

Phase	H / S	C_p
GAS	Ja1	Ja1

C2N2[g] ETHANEDINITRILE (GAS) 52.035

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K. [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	56.627	241.572	241.572	309.072	0.000	237.047	309.072	297.598	−52.138
	300.00	56.756	241.923	241.573	309.177	0.105	236.600	309.091	297.527	−51.804
	400.00	62.053	259.042	243.872	315.140	6.068	211.523	310.063	293.522	−38.330
	500.00	65.584	273.288	248.370	321.531	12.459	184.887	310.852	289.291	−30.222
	600.00	68.336	285.497	253.564	328.232	19.160	156.933	311.409	284.923	−24.805
	700.00	70.649	296.209	258.907	335.184	26.112	127.837	311.762	280.478	−20.930
	800.00	72.663	305.777	264.178	342.351	33.279	97.730	311.973	275.993	−18.020
	900.00	74.447	314.441	269.289	349.709	40.637	66.712	312.088	271.488	−15.757
	1000.00	76.035	322.368	274.206	357.234	48.162	34.866	312.135	266.973	−13.945
	1100.00	77.449	329.683	278.921	364.910	55.838	2.259	312.135	262.457	−12.463
	1200.00	78.699	336.477	283.438	372.719	63.647	−31.053	312.104	257.942	−11.228
	1300.00	79.795	342.820	287.764	380.645	71.573	−65.022	312.053	253.430	−10.183
	1400.00	80.740	348.769	291.912	388.673	79.601	−99.604	311.989	248.923	−9.287
	1500.00	81.538	354.368	295.891	396.788	87.716	−134.764	311.916	244.421	−8.512
	1600.00	82.191	359.652	299.712	404.975	95.903	−170.467	311.837	239.924	−7.833
	1700.00	82.703	364.651	303.386	413.221	104.149	−206.685	311.750	235.432	−7.234
	1800.00	83.072	369.389	306.923	421.511	112.439	−243.389	311.650	230.946	−6.702
	1900.00	83.301	373.887	310.330	429.831	120.759	−280.554	311.531	226.465	−6.226
	2000.00	83.390	378.163	313.615	438.167	129.095	−318.159	311.384	221.992	−5.798

References

Phase	H / S	C_p
GAS	Ja1	Ja1

28.010 CARBON MONOXIDE (GAS) CO(g)

Phase	T	C_p	S	$-(G-H^\circ_{298.15})/T$	$H-H^\circ_{298.15}$	S_{mag}	H_{mag}	G_{mag}	$C_{p,mag}$
	K	J/(K mol)			kJ/mol				
GAS	298.15	29.140	197.661	197.661	−110.541	0.000	−110.541	−137.168	24.033
	300.00	29.144	197.841	197.662	−110.487	0.054	−110.530	−137.345	23.914
	400.00	29.342	206.250	198.807	−107.584	2.977	−110.123	−146.394	19.112
	500.00	29.734	212.841	200.877	−104.603	5.932	−110.035	−155.428	16.237
	600.00	30.444	218.328	203.424	−101.580	8.942	−110.185	−164.494	14.320
	700.00	31.171	223.075	205.990	−98.513	12.020	−110.510	−173.522	12.943
	800.00	31.888	227.295	208.515	−95.384	15.177	−110.943	−182.494	11.916
	900.00	32.578	231.082	210.937	−92.140	18.401	−111.456	−191.408	11.109
	1000.00	33.183	234.547	213.257	−88.831	21.691	−112.021	−200.261	10.461
	1100.00	33.710	237.735	215.479	−85.506	25.038	−112.619	−209.058	9.927
	1200.00	34.172	240.693	217.607	−82.111	28.430	−113.240	−217.796	9.490
	1300.00	34.573	243.440	219.646	−78.674	31.867	−113.880	−226.482	9.100
	1400.00	34.919	245.995	221.601	−75.196	35.342	−114.537	−235.118	8.772
	1500.00	35.220	248.434	223.535	−71.691	38.850	−115.224	−243.707	8.487
	1600.00	35.481	250.716	224.225	−68.156	42.388	−115.906	−252.250	8.235
	1700.00	35.710	252.874	226.848	−64.596	45.945	−116.596	−260.751	8.012
	1800.00	35.912	254.921	227.407	−61.015	49.525	−117.290	−269.211	7.812
	1900.00	36.090	256.868	228.906	−57.415	53.125	−117.987	−277.631	7.633
	2000.00	36.249	258.723	230.351	−53.797	56.744	−118.706	−286.016	7.470
	2100.00	36.391	260.495	231.743	−50.165	60.378	−119.429	−294.362	7.322
	2200.00	36.518	262.191	233.090	−46.520	64.027	−120.157	−302.678	7.186
	2300.00	36.634	263.817	234.391	−42.862	67.679	−120.889	−310.955	7.062
	2400.00	36.740	265.378	235.650	−39.193	71.348	−121.626	−319.203	6.947
	2500.00	36.838	266.880	236.869	−35.514	75.027	−122.369	−327.419	6.841
	2600.00	36.929	268.326	238.052	−31.823	78.715	−123.116	−335.605	6.742
	2700.00	37.013	269.722	239.199	−28.130	82.411	−123.869	−343.762	6.650
	2800.00	37.091	271.069	240.313	−24.425	86.116	−124.712	−351.889	6.565
	2900.00	37.161	272.371	241.395	−20.714	89.827	−125.500	−359.988	6.484
	3000.00	37.216	273.632	242.450	−16.995	93.548	−126.305	−368.061	6.409

References

Phase			C_p
GAS	001		001

CO2[g] CARBON DIOXIDE (GAS) 44.010

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	37.132	213.770	213.770	–393.505	0.000	–457.240	–393.505	–394.364	69.091
	300.00	37.217	214.000	213.770	–393.436	0.069	–457.636	–393.506	–394.370	68.666
	400.00	41.326	225.291	215.282	–389.501	4.004	–479.618	–393.580	–394.646	51.535
	500.00	44.625	234.880	218.266	–385.198	8.307	–502.638	–393.666	–394.903	41.255
	600.00	47.323	243.262	221.748	–380.596	12.909	–526.554	–393.805	–395.139	34.400
	700.00	49.563	250.731	225.364	–375.749	17.756	–551.260	–393.990	–395.347	29.501
	800.00	51.434	257.475	228.963	–370.696	22.809	–576.676	–394.198	–395.527	25.825
	900.00	52.999	263.626	232.478	–365.472	28.033	–602.735	–394.412	–395.680	22.965
	1000.00	54.308	269.280	235.879	–360.105	33.400	–629.384	–394.626	–395.810	20.675
	1100.00	55.412	274.509	239.156	–354.617	38.888	–656.577	–394.837	–395.918	18.801
	1200.00	56.342	279.371	242.307	–349.028	44.477	–684.274	–395.042	–396.007	17.238
	1300.00	57.130	283.913	245.335	–343.354	50.151	–712.441	–395.242	–396.079	15.915
	1400.00	57.803	288.172	248.244	–337.606	55.899	–741.047	–395.437	–396.136	14.780
	1500.00	58.381	292.180	251.041	–331.796	61.709	–770.067	–395.628	–396.179	13.796
	1600.00	58.883	295.965	253.732	–325.932	67.573	–799.476	–395.815	–396.210	12.935
	1700.00	59.321	299.548	256.322	–320.022	73.483	–829.253	–396.000	–396.229	12.175
	1800.00	59.705	302.950	258.819	–314.070	79.435	–859.379	–396.185	–396.237	11.499
	1900.00	60.046	306.187	261.228	–308.082	85.423	–889.837	–396.371	–396.235	10.893
	2000.00	60.349	309.275	263.553	–302.062	91.443	–920.612	–396.561	–396.223	10.348
	2100.00	60.620	312.226	265.801	–296.013	97.492	–951.688	–396.757	–396.201	9.855
	2200.00	60.864	315.052	267.976	–289.939	103.566	–983.053	–396.961	–396.170	9.406
	2300.00	61.086	317.762	270.082	–283.841	109.664	–1014.694	–397.173	–396.129	8.996
	2400.00	61.288	320.366	272.124	–277.722	115.783	–1046.602	–397.394	–396.079	8.620
	2500.00	61.473	322.872	274.104	–271.584	121.921	–1078.764	–397.627	–396.020	8.274
	2600.00	61.644	325.286	276.026	–265.428	128.077	–1111.173	–397.870	–395.951	7.955
	2700.00	61.804	327.616	277.894	–259.256	134.249	–1143.819	–398.126	–395.872	7.659
	2800.00	61.953	329.866	279.710	–253.068	140.437	–1176.694	–398.393	–395.784	7.383
	2900.00	62.094	332.043	281.477	–246.865	146.640	–1209.790	–398.673	–395.686	7.127
	3000.00	62.228	334.150	283.198	–240.649	152.856	–1243.100	–398.965	–395.578	6.888

References

Phase	H / S	C_p
GAS	Co1	Ja1

63.463 CARBONYL CHLORIDE (GAS) **COCl[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	45.077	267.885	267.885	−62.760	0.000	−142.630	−62.760	−77.075	13.503
	300.00	45.121	268.164	267.886	−62.677	0.083	−143.126	−62.751	−77.164	13.435
	400.00	47.243	281.448	269.683	−58.054	4.706	−170.633	−62.385	−82.030	10.712
	500.00	48.934	292.178	273.143	−53.242	9.518	−199.331	−62.219	−86.964	9.085
	600.00	50.323	301.226	277.089	−48.277	14.483	−229.013	−62.231	−91.914	8.002
	700.00	51.486	309.074	281.110	−43.185	19.575	−259.537	−62.383	−96.851	7.227
	800.00	52.465	316.015	285.047	−37.986	24.774	−290.798	−62.629	−101.759	6.644
	900.00	53.291	322.243	288.840	−32.697	30.063	−322.716	−62.939	−106.633	6.189
	1000.00	53.984	327.895	292.467	−27.332	35.428	−355.227	−63.295	−111.469	5.823
	1100.00	54.563	333.068	295.926	−21.904	40.856	−388.279	−63.687	−116.267	5.521
	1200.00	55.043	337.837	299.223	−16.423	46.337	−421.827	−64.108	−121.029	5.268
	1300.00	55.438	342.259	302.365	−10.898	51.862	−455.835	−64.553	−125.755	5.053
	1400.00	55.762	346.379	305.364	−5.338	57.422	−490.269	−65.019	−130.445	4.867
	1500.00	56.028	350.236	308.228	0.252	63.012	−525.102	−65.503	−135.102	4.705
	1600.00	56.248	353.859	310.968	5.866	68.626	−560.309	−66.004	−139.725	4.562
	1700.00	56.436	357.275	313.592	11.501	74.261	−595.867	−66.521	−144.317	4.434
	1800.00	56.602	360.506	316.110	17.153	79.913	−631.757	−67.053	−148.878	4.320
	1900.00	56.760	363.570	318.528	22.821	85.581	−667.962	−67.598	−153.409	4.218
	2000.00	56.922	366.486	320.853	28.505	91.265	−704.466	−68.155	−157.911	4.124

References

Phase	H / S	C_p
GAS	Ja1	Ja1

$COCl_2$[g] CARBONIC DICHLORIDE (PHOSGEN) 98.916

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	57.703	283.852	283.852	−220.078	0.000	−304.708	−220.078	−205.892	36.071
	300.00	57.835	284.209	283.853	−219.971	0.107	−305.234	−220.077	−205.804	35.834
	400.00	63.909	301.730	286.200	−213.866	6.212	−334.558	−219.962	−201.061	26.256
	500.00	68.103	316.470	290.819	−207.253	12.825	−365.488	−219.780	−196.357	20.513
	600.00	71.074	329.164	296.177	−200.286	19.792	−397.784	−219.608	−191.689	16.688
	700.00	73.277	340.293	301.701	−193.063	27.015	−431.268	−219.468	−187.047	13.958
	800.00	74.969	350.193	307.155	−185.647	34.431	−465.802	−219.350	−182.423	11.911
	900.00	76.300	359.103	312.440	−178.082	41.996	−501.274	−219.245	−177.814	10.320
	1000.00	77.361	367.199	317.517	−170.397	49.681	−537.595	−219.151	−173.216	9.048
	1100.00	78.215	374.614	322.376	−162.616	57.462	−574.691	−219.068	−168.626	8.007
	1200.00	78.904	381.450	327.017	−154.759	65.319	−612.499	−218.995	−164.044	7.141
	1300.00	79.462	387.788	331.451	−146.840	73.238	−650.965	−218.932	−159.467	6.407
	1400.00	79.914	393.694	335.689	−138.870	81.208	−690.042	−218.879	−154.895	5.779
	1500.00	80.282	399.221	339.742	−130.860	89.218	−729.691	−218.838	−150.326	5.235
	1600.00	80.586	404.412	343.623	−122.816	97.262	−769.875	−218.807	−145.760	4.759
	1700.00	80.842	409.305	347.344	−114.744	105.334	−810.563	−218.789	−141.195	4.338
	1800.00	81.067	413.933	350.916	−106.649	113.429	−851.727	−218.782	−136.631	3.965
	1900.00	81.276	418.321	354.349	−98.531	121.547	−893.342	−218.786	−132.067	3.631
	2000.00	81.483	422.496	357.653	−90.393	129.685	−935.384	−218.802	−127.503	3.330

References

Phase	H / S	C_p
GAS	Ja1	Ja1

47.009 CARBONYL FLUORIDE (GAS) **COF**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	38.939	246.965	246.965	−171.544	0.000	−245.177	−171.544	−182.651	32.000
	300.00	38.994	247.206	246.966	−171.472	0.072	−245.634	−171.544	−182.720	31.814
	400.00	42.247	258.867	248.534	−167.411	4.133	−270.958	−171.612	−186.439	24.346
	500.00	45.094	268.612	251.601	−163.038	8.506	−297.344	−171.782	−190.128	19.863
	600.00	47.350	277.041	255.154	−158.412	13.132	−324.636	−172.052	−193.773	16.869
	700.00	49.146	284.480	258.822	−153.584	17.960	−352.720	−172.404	−197.366	14.728
	800.00	50.594	291.140	262.453	−148.594	22.950	−381.506	−172.810	−200.905	13.118
	900.00	51.772	297.170	265.981	−143.474	28.070	−410.927	−173.249	−204.391	11.863
	1000.00	52.734	302.676	269.379	−138.247	33.297	−440.923	−173.713	−207.827	10.856
	1100.00	53.520	307.740	272.639	−132.933	38.611	−471.447	−174.196	−211.215	10.030
	1200.00	54.161	312.425	275.762	−127.548	43.996	−502.458	−174.695	−214.558	9.339
	1300.00	54.682	316.782	278.752	−122.105	49.439	−533.921	−175.208	−217.859	8.754
	1400.00	55.106	320.850	281.615	−116.615	54.929	−565.805	−175.735	−221.121	8.250
	1500.00	55.451	324.664	284.359	−111.086	60.458	−598.083	−176.275	−224.344	7.812
	1600.00	55.736	328.252	286.992	−105.527	66.017	−630.731	−176.828	−227.530	7.428
	1700.00	55.977	331.639	289.519	−99.941	71.603	−663.727	−177.393	−230.682	7.088
	1800.00	56.192	334.845	291.949	−94.332	77.212	−697.052	−177.969	−233.800	6.785
	1900.00	56.394	337.888	294.287	−88.703	82.841	−730.690	−178.555	−236.886	6.512
	2000.00	56.601	340.786	296.541	−83.053	88.491	−764.625	−179.150	−239.940	6.267

References

Phase	H / S	C_p
GAS	Ja1	Ja1

COF2[g] CARBONIC DIFLUORIDE (GAS) 66.007

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	47.268	258.890	258.890	−638.897	0.000	−716.085	−638.897	−623.328	109.204
	300.00	47.400	259.183	258.891	−638.809	0.088	−716.564	−638.910	−623.231	108.514
	400.00	54.720	273.837	260.839	−633.698	5.199	−743.233	−639.535	−617.905	80.690
	500.00	60.567	286.708	264.752	−627.919	10.978	−771.273	−639.980	−612.443	63.981
	600.00	64.915	298.154	269.383	−621.634	17.263	−800.527	−640.328	−606.902	52.836
	700.00	68.209	308.419	274.239	−614.971	23.926	−830.864	−640.621	−601.307	44.870
	800.00	70.765	317.701	279.101	−608.017	30.880	−862.178	−640.865	−595.674	38.893
	900.00	72.784	326.157	283.867	−600.836	38.061	−894.377	−641.067	−590.012	34.243
	1000.00	74.396	333.912	288.489	−593.474	45.423	−927.386	−641.236	−584.330	30.522
	1100.00	75.693	341.066	292.948	−585.967	52.930	−961.139	−641.379	−578.632	27.477
	1200.00	76.737	347.698	297.237	−578.344	60.553	−995.582	−641.504	−572.923	24.939
	1300.00	77.580	353.875	301.359	−570.626	68.271	−1030.664	−641.616	−567.203	22.790
	1400.00	78.262	359.650	305.319	−562.833	76.064	−1066.343	−641.721	−561.475	20.949
	1500.00	78.815	365.069	309.123	−554.978	83.919	−1102.582	−641.823	−555.739	19.353
	1600.00	79.272	370.171	312.781	−547.073	91.824	−1139.346	−641.926	−549.997	17.956
	1700.00	79.658	374.989	316.300	−539.126	99.771	−1176.607	−642.030	−544.248	16.723
	1800.00	79.998	379.551	319.688	−531.143	107.754	−1214.336	−642.138	−538.493	15.627
	1900.00	80.316	383.885	322.954	−523.127	115.770	−1252.509	−642.250	−532.732	14.646
	2000.00	80.636	388.013	326.104	−515.080	123.817	−1291.106	−642.363	−526.965	13.763

References

Phase	H / S	C_p
GAS	Ja1	Ja1

60.076 CARBON OXIDE SULFIDE (GAS) **COS**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	41.506	231.581	231.581	−138.407	0.000	−207.453	−138.407	−165.602	29.013
	300.00	41.592	231.838	231.582	−138.330	0.077	−207.882	−138.415	−165.770	28.863
	400.00	45.791	244.403	233.266	−133.952	4.455	−231.714	−141.141	−174.726	22.817
	500.00	48.937	254.977	236.579	−129.208	9.199	−256.696	−143.160	−182.912	19.109
	600.00	51.304	264.117	240.424	−124.191	14.216	−282.661	−144.878	−190.693	16.601
	700.00	53.159	272.171	244.395	−118.964	19.443	−309.484	−146.367	−198.210	14.791
	800.00	54.660	279.370	248.325	−113.571	24.836	−337.067	−147.926	−205.512	13.419
	900.00	55.902	285.882	252.142	−108.041	30.366	−365.335	−202.338	−211.460	12.273
	1000.00	56.945	291.828	255.818	−102.397	36.010	−394.225	−202.379	−212.471	11.098
	1100.00	57.828	297.298	259.343	−96.657	41.750	−423.685	−202.425	−213.478	10.137
	1200.00	58.581	302.362	262.720	−90.836	47.571	−453.671	−202.472	−214.481	9.336
	1300.00	59.223	307.077	265.953	−84.945	53.462	−484.145	−202.519	−215.480	8.658
	1400.00	59.771	311.487	269.049	−78.994	59.413	−515.076	−202.563	−216.475	8.077
	1500.00	60.240	315.627	272.018	−72.993	65.414	−546.434	−202.605	−217.468	7.573
	1600.00	60.642	319.528	274.867	−66.948	71.459	−578.193	−202.647	−218.457	7.132
	1700.00	60.987	323.215	277.603	−60.867	77.540	−610.332	−202.687	−219.444	6.743
	1800.00	61.285	326.710	280.235	−54.753	83.654	−642.830	−202.728	−220.428	6.397
	1900.00	61.547	330.030	282.769	−48.611	89.796	−675.668	−202.771	−221.411	6.087
	2000.00	61.780	333.193	285.212	−42.444	95.963	−708.831	−202.818	−222.390	5.808
	2100.00	61.993	336.213	287.569	−36.255	102.152	−742.302	−202.870	−223.368	5.556
	2200.00	62.196	339.101	289.846	−30.046	108.361	−776.069	−202.926	−224.343	5.327
	2300.00	62.395	341.871	292.049	−23.816	114.591	−810.119	−202.987	−225.315	5.117
	2400.00	62.599	344.530	294.180	−17.567	120.840	−844.440	−203.051	−226.284	4.925
	2500.00	62.816	347.090	296.246	−11.296	127.111	−879.021	−203.116	−227.251	4.748

References

Phase	H / S	C_p
GAS	Ja1	Ja1

CS[g] CARBON MONOSULFIDE (GAS) 44.077

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	29.804	210.565	210.565	280.328	0.000	217.548	280.328	228.817	−40.088
	300.00	29.813	210.749	210.565	280.383	0.055	217.158	280.325	228.498	−39.785
	400.00	30.943	219.462	211.746	283.415	3.087	195.630	277.739	211.356	−27.600
	500.00	32.204	226.506	214.015	286.574	6.246	173.321	275.664	194.974	−20.369
	600.00	33.230	232.472	216.606	289.847	9.519	150.364	273.782	179.019	−15.585
	700.00	34.039	237.658	219.251	293.213	12.885	126.852	272.059	163.362	−12.190
	800.00	34.680	242.247	221.844	296.650	16.322	102.852	270.212	147.957	−9.661
	900.00	35.193	246.362	224.344	300.144	19.816	78.419	215.468	133.945	−7.774
	1000.00	35.606	250.092	226.735	303.685	23.357	53.593	215.054	124.909	−6.525
	1100.00	35.939	253.502	229.016	307.263	26.935	28.411	214.601	115.916	−5.504
	1200.00	36.209	256.641	231.189	310.871	30.543	2.902	214.115	106.966	−4.656
	1300.00	36.427	259.548	233.260	314.503	34.175	−22.910	213.601	98.057	−3.940
	1400.00	36.605	262.254	235.235	318.155	37.827	−49.001	213.065	89.189	−3.328
	1500.00	36.751	264.785	237.122	321.823	41.495	−75.355	212.510	80.360	−2.798
	1600.00	36.874	267.161	238.926	325.504	45.176	−101.953	211.939	71.569	−2.336
	1700.00	36.980	269.400	240.653	329.197	48.869	−128.782	211.355	62.813	−1.930
	1800.00	37.077	271.516	242.310	332.900	52.572	−155.829	210.761	54.093	−1.570
	1900.00	37.172	273.523	243.900	336.612	56.284	−183.082	210.158	45.405	−1.248
	2000.00	37.270	275.433	245.429	340.334	60.006	−210.531	209.549	36.750	−0.960
	2100.00	37.378	277.254	246.902	344.067	63.739	−238.166	208.933	28.125	−0.700
	2200.00	37.503	278.995	248.321	347.811	67.483	−265.979	208.315	19.530	−0.464

References

Phase	H / S	C_p
GAS	Ja1	Ja1

76.143 CARBON DISULFIDE (GAS) **CS2**[g]

Phase	T	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	45.677	237.970	237.970	116.943	0.000	45.992	116.943	66.819	–11.706
	300.00	45.750	238.253	237.971	117.028	0.085	45.552	116.927	66.508	–11.580
	400.00	49.613	251.958	239.813	121.801	4.858	21.018	111.502	50.021	–6.532
	500.00	52.545	263.362	243.414	126.917	9.974	–4.764	107.482	35.071	–3.664
	600.00	54.667	273.140	247.573	132.283	15.340	–31.601	104.116	20.921	–1.821
	700.00	56.252	281.691	251.849	137.833	20.890	–59.351	101.268	7.282	–0.543
	800.00	57.477	289.286	256.063	143.522	26.579	–87.907	98.313	–5.946	0.388
	900.00	58.453	296.114	260.140	149.320	32.377	–117.183	–10.334	–16.488	0.957
	1000.00	59.245	302.315	264.052	155.206	38.263	–147.109	–10.237	–17.177	0.897
	1100.00	59.899	307.993	267.792	161.164	44.221	–177.629	–10.153	–17.876	0.849
	1200.00	60.444	313.229	271.363	167.182	50.239	–208.693	–10.077	–18.581	0.809
	1300.00	60.901	318.086	274.773	173.250	56.307	–240.262	–10.009	–19.293	0.775
	1400.00	61.288	322.614	278.030	179.360	62.417	–272.299	–9.946	–20.009	0.747
	1500.00	61.617	326.854	281.145	185.506	68.563	–304.775	–9.888	–20.730	0.722
	1600.00	61.897	330.840	284.128	191.682	74.739	–337.662	–9.832	–21.455	0.700
	1700.00	62.139	334.600	286.987	197.884	80.941	–370.935	–9.779	–22.183	0.682
	1800.00	62.350	338.157	289.732	204.109	87.166	–404.575	–9.728	–22.914	0.665
	1900.00	62.537	341.534	292.370	210.353	93.410	–438.561	–9.679	–23.648	0.650
	2000.00	62.706	344.746	294.910	216.615	99.672	–472.876	–9.633	–24.384	0.637

References

Phase	H / S	C_p
GAS	Ja1	Ja1

Ca CALCIUM 40.078

Phase	T [K]	C_p J / (K mol)	S J / (K mol)	−(G−H298)/T J / (K mol)	H kJ / mol	H−H298 kJ / mol	G kJ / mol	ΔH_f kJ / mol	ΔG_f kJ / mol	log K_f [−]
SOL−A	298.15	25.311	41.422	41.422	0.000	0.000	−12.350	0.000	0.000	0.000
	300.00	25.323	41.578	41.422	0.047	0.047	−12.427	0.000	0.000	0.000
	400.00	26.255	48.978	42.425	2.621	2.621	−16.970	0.000	0.000	0.000
	500.00	27.683	54.981	44.353	5.314	5.314	−22.176	0.000	0.000	0.000
	600.00	29.552	60.187	46.566	8.172	8.172	−27.940	0.000	0.000	0.000
	700.00	31.846	64.910	48.854	11.239	11.239	−34.198	0.000	0.000	0.000
	720.00	32.355	65.814	49.313	11.881	11.881	−35.505	0.000	0.000	0.000
			1.278		0.920					
SOL−B	720.00	29.345	67.092	49.313	12.801	12.801	−35.505	0.000	0.000	0.000
	800.00	32.647	70.354	51.254	15.281	15.281	−41.003	0.000	0.000	0.000
	900.00	36.775	74.438	53.603	18.752	18.752	−48.242	0.000	0.000	0.000
	1000.00	40.903	78.526	55.891	22.636	22.636	−55.891	0.000	0.000	0.000
	1100.00	45.031	82.618	58.134	26.932	26.932	−63.948	0.000	0.000	0.000
	1112.00	45.526	83.109	58.401	27.476	27.476	−64.942	0.000	0.000	0.000
			7.675		8.535					
LIQ	1112.00	29.288	90.785	58.401	36.011	36.011	−64.942	0.000	0.000	0.000
	1200.00	29.288	93.015	60.859	38.588	38.588	−73.031	0.000	0.000	0.000
	1300.00	29.288	95.360	63.424	41.517	41.517	−82.451	0.000	0.000	0.000
	1400.00	29.288	97.530	65.783	44.445	44.445	−92.097	0.000	0.000	0.000
	1500.00	29.288	99.551	67.968	47.374	47.374	−101.952	0.000	0.000	0.000
	1600.00	29.288	101.441	70.002	50.303	50.303	−112.003	0.000	0.000	0.000
	1700.00	29.288	103.217	71.904	53.232	53.232	−122.236	0.000	0.000	0.000
	1755.00	29.288	104.149	72.900	54.843	54.843	−127.939	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks	
SOL−A	Hu1	Hu1		
SOL−B	Hu1	Hu1		
LIQ	Hu1	Hu1	Hu1	BPT= 1755., L= 153.64 kJ

40.078 CALCIUM (GAS) **Ca**[g]

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	20.786	154.884	154.884	178.238	0.000	132.059	178.238	144.409	−25.300
	300.00	20.786	155.013	154.884	178.276	0.038	131.773	178.230	144.199	−25.107
	400.00	20.786	160.992	155.700	180.355	2.117	115.958	177.734	132.928	−17.359
	500.00	20.786	165.631	157.239	182.434	4.196	99.618	177.119	121.795	−12.724
	600.00	20.786	169.420	158.963	184.512	6.274	82.860	176.340	110.800	−9.646
	700.00	20.786	172.625	160.692	186.591	8.353	65.754	175.352	99.952	−7.458
	800.00	20.786	175.400	162.361	188.670	10.432	48.349	173.389	89.352	−5.834
	900.00	20.786	177.848	163.948	190.748	12.510	30.685	171.996	78.927	−4.581
	1000.00	20.786	180.038	165.450	192.827	14.589	12.788	170.191	68.679	−3.587
	1100.00	20.786	182.020	166.867	194.905	16.667	−5.316	167.973	58.632	−2.784
	1200.00	20.786	183.828	168.207	196.984	18.746	−23.610	158.396	49.421	−2.151
	1300.00	20.786	185.492	169.473	199.063	20.825	−42.077	157.546	40.374	−1.622
	1400.00	20.792	187.033	170.673	201.141	22.903	−60.704	156.696	31.393	−1.171
	1500.00	20.795	188.467	171.812	203.221	24.983	−79.480	155.847	22.472	−0.783
	1600.00	20.802	189.810	172.895	205.301	27.063	−98.395	154.998	13.608	−0.444
	1700.00	20.817	191.071	173.928	207.381	29.143	−117.439	154.150	4.797	−0.147
	1800.00	20.846	192.262	174.914	209.465	31.227	−136.606	0.000	0.000	0.000
	1900.00	20.890	193.390	175.857	211.551	33.313	−155.890	0.000	0.000	0.000
	2000.00	20.952	194.463	176.760	213.643	35.405	−175.283	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1

$Ca_3(AsO_4)_2$ CALCIUM ARSENATE 398.072

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	249.785	225.999	225.999	−3298.707	0.000	−3366.089	−3298.707	−3063.089	536.640
	300.00	250.456	227.546	226.004	−3298.244	0.463	−3366.508	−3298.693	−3061.627	533.077
	400.00	275.881	303.493	236.186	−3271.784	26.923	−3393.181	−3296.854	−2982.832	389.518
	500.00	290.524	366.743	256.153	−3243.412	55.295	−3426.784	−3293.930	−2904.654	303.447
	600.00	300.923	420.673	279.189	−3213.817	84.890	−3466.221	−3290.792	−2827.094	246.120
	700.00	309.318	467.709	302.832	−3183.293	115.414	−3510.689	−3287.842	−2750.049	205.211
	800.00	316.644	509.500	326.101	−3151.988	146.719	−3559.588	−3287.474	−2673.128	174.537
	900.00	323.350	547.187	348.606	−3119.985	178.722	−3612.453	−3285.070	−2596.488	150.696
	1000.00	329.670	581.585	370.209	−3087.331	211.376	−3668.916	−3283.536	−2520.069	131.635
	1100.00	335.738	613.292	390.885	−3054.059	244.648	−3728.680	−3282.865	−2443.762	116.045
	1200.00	341.634	642.759	410.661	−3020.189	278.518	−3791.500	−3304.060	−2365.625	102.973
	1300.00	347.410	670.333	429.586	−2985.736	312.971	−3857.169	−3299.200	−2287.621	91.918
	1400.00	353.098	696.287	447.718	−2950.710	347.997	−3925.512	−3294.970	−2209.972	82.455
	1500.00	358.721	720.841	465.115	−2915.119	383.588	−3996.380	−3484.963	−2119.732	73.816
	1600.00	364.294	744.170	481.833	−2878.968	419.739	−4069.640	−3476.001	−2029.007	66.240
	1700.00	369.830	766.422	497.924	−2842.261	456.446	−4145.178	−3466.586	−1938.855	59.574
	1723.00	371.099	771.400	501.541	−2833.740	464.967	−4162.863	−3464.357	−1918.201	58.152

References

Phase	H / S	C_p
SOL	Nb1	G1

119.982 CALCIUM MONOBROMIDE (GAS) **CaBr**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	36.376	252.907	252.907	−49.371	0.000	−124.775	−49.371	−89.735	15.721
	300.00	36.391	253.132	252.907	−49.304	0.067	−125.243	−49.421	−89.985	15.668
	400.00	36.945	263.687	254.343	−45.633	3.738	−151.108	−65.566	−100.230	13.089
	500.00	37.232	271.965	257.069	−41.923	7.448	−177.906	−66.395	−108.803	11.367
	600.00	37.413	278.770	260.136	−38.190	11.181	−205.452	−67.379	−117.195	10.203
	700.00	37.544	284.547	263.221	−34.442	14.929	−233.625	−68.565	−125.407	9.358
	800.00	37.649	289.568	266.207	−30.683	18.688	−262.337	−70.721	−133.342	8.706
	900.00	37.738	294.007	269.054	−26.913	22.458	−291.520	−72.301	−141.079	8.188
	1000.00	37.818	297.988	271.752	−23.135	26.236	−321.123	−74.290	−148.618	7.763
	1100.00	37.891	301.595	274.303	−19.350	30.021	−351.105	−76.688	−155.938	7.405
	1200.00	37.960	304.895	276.717	−15.557	33.814	−381.432	−86.441	−162.405	7.069
	1300.00	38.026	307.936	279.003	−11.758	37.613	−412.075	−87.463	−168.694	6.778
	1400.00	38.090	310.757	281.172	−7.952	41.419	−443.012	−88.482	−174.905	6.526
	1500.00	38.153	313.387	283.233	−4.140	45.231	−474.220	−89.497	−181.042	6.304
	1600.00	38.214	315.851	285.195	−0.321	49.050	−505.684	−90.508	−187.112	6.109
	1700.00	38.274	318.170	287.067	3.503	52.874	−537.386	−91.517	−193.119	5.934
	1800.00	38.334	320.359	288.857	7.333	56.704	−569.313	−245.825	−195.103	5.662
	1900.00	38.393	322.433	290.570	11.170	60.541	−601.454	−245.985	−192.280	5.286
	2000.00	38.451	324.404	292.213	15.012	64.383	−633.796	−246.146	−189.450	4.948

References

Phase	H / S	C_p
GAS	Ja1	Ja1

CaBr2 CALCIUM BROMIDE 199.886

Phase	T [K]	C_p [J / (K mol)]	S [J / (K mol)]	−(G−H298)/T [J / (K mol)]	H [kJ / mol]	H−H298 [kJ / mol]	G [kJ / mol]	ΔH_f [kJ / mol]	ΔG_f [kJ / mol]	log K_f [−]
SOL	298.15	75.046	129.704	129.704	−683.247	0.000	−721.918	−683.247	−664.187	116.363
	300.00	75.123	130.168	129.705	−683.108	0.139	−722.159	−683.295	−664.069	115.625
	400.00	77.966	152.220	132.693	−675.436	7.811	−736.324	−712.679	−651.538	85.082
	500.00	79.486	169.795	138.415	−667.557	15.690	−752.455	−711.186	−636.426	66.487
	600.00	80.487	184.381	144.895	−659.556	23.691	−770.184	−709.761	−621.609	54.116
	700.00	81.624	196.863	151.448	−651.457	31.790	−789.261	−708.464	−607.022	45.297
	800.00	83.481	207.877	157.826	−643.207	40.040	−809.508	−708.003	−592.521	38.688
	900.00	85.848	217.842	163.949	−634.744	48.503	−830.801	−706.769	−578.162	33.556
	1000.00	88.620	227.027	169.803	−626.024	57.223	−853.050	−705.698	−563.931	29.457
	1015.00	89.067	228.350	170.659	−624.691	58.556	−856.466	−705.549	−561.805	28.912
			28.649		29.079					
LIQ	1015.00	112.968	256.999	170.659	−595.612	87.635	−856.466	−676.470	−561.805	28.912
	1100.00	112.968	266.084	177.686	−586.010	97.237	−878.702	−673.753	−552.316	26.227
	1200.00	112.968	275.913	185.468	−574.713	108.534	−905.809	−677.892	−540.787	23.540
	1300.00	112.968	284.956	192.778	−563.416	119.831	−933.858	−673.310	−529.547	21.277
	1400.00	112.968	293.327	199.665	−552.119	131.128	−962.778	−668.733	−518.660	19.351
	1500.00	112.968	301.121	206.172	−540.823	142.424	−992.505	−664.162	−508.100	17.694
	1600.00	112.968	308.412	212.336	−529.526	153.721	−1022.985	−659.597	−497.845	16.253
	1700.00	112.968	315.261	218.191	−518.229	165.018	−1054.172	−655.036	−487.875	14.991
	1800.00	112.968	321.718	223.765	−506.932	176.315	−1086.024	−803.785	−474.210	13.761
	1900.00	112.968	327.826	229.083	−495.635	187.612	−1118.504	−798.393	−456.047	12.538
	2000.00	112.968	333.620	234.166	−484.339	198.908	−1151.579	−793.011	−438.168	11.444
	2081.00	112.968	338.105	238.125	−475.188	208.059	−1178.785	−788.661	−423.884	10.640

References

Phase	H / S	C_p	Remarks	
SOL	Ja1,Nb1	Ja1		
LIQ	Ja1	Ja1	Ja1	BPT= 2081., L= 201. kJ

199.886 CALCIUM BROMIDE (GAS) **CaBr2**[g]

Phase	T	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	60.387	314.746	314.746	–384.928	0.000	–478.770	–384.928	–421.038	73.764
	300.00	60.409	315.120	314.747	–384.816	0.112	–479.352	–385.003	–421.262	73.348
	400.00	61.214	332.624	317.128	–378.730	6.198	–511.779	–415.973	–426.993	55.760
	500.00	61.609	346.330	321.648	–372.587	12.341	–545.752	–416.215	–429.723	44.893
	600.00	61.831	357.584	326.727	–366.414	18.514	–580.964	–416.619	–432.389	37.643
	700.00	61.967	367.127	331.834	–360.223	24.705	–617.212	–417.230	–434.973	32.458
	800.00	62.057	375.407	336.775	–354.022	30.906	–654.348	–418.818	–437.361	28.557
	900.00	62.120	382.721	341.481	–347.813	37.115	–692.261	–419.837	–439.622	25.515
	1000.00	62.165	389.268	345.938	–341.598	43.330	–730.866	–421.272	–441.747	23.074
	1100.00	62.198	395.195	350.151	–335.380	49.548	–770.094	–423.124	–443.708	21.070
	1200.00	62.224	400.608	354.134	–329.159	55.769	–809.888	–432.338	–444.866	19.365
	1300.00	62.243	405.589	357.903	–322.936	61.992	–850.201	–432.829	–445.890	17.916
	1400.00	62.259	410.202	361.476	–316.710	68.218	–890.994	–433.324	–446.876	16.673
	1500.00	62.272	414.498	364.869	–310.484	74.444	–932.231	–433.823	–447.827	15.595
	1600.00	62.282	418.518	368.098	–304.256	80.672	–973.884	–434.327	–448.744	14.650
	1700.00	62.291	422.294	371.176	–298.027	86.901	–1015.927	–434.835	–449.630	13.815
	1800.00	62.298	425.854	374.115	–291.798	93.130	–1058.336	–588.651	–446.521	12.958
	1900.00	62.304	429.223	376.928	–285.568	99.360	–1101.091	–588.326	–438.634	12.059
	2000.00	62.309	432.419	379.623	–279.337	105.591	–1144.175	–588.010	–430.764	11.250
	2100.00	62.313	435.459	382.210	–273.106	111.822	–1187.570	–587.706	–422.909	10.519
	2200.00	62.317	438.358	384.697	–266.875	118.053	–1231.262	–587.416	–415.069	9.855
	2300.00	62.320	441.128	387.091	–260.643	124.285	–1275.237	–587.141	–407.241	9.249
	2400.00	62.323	443.780	389.398	–254.411	130.517	–1319.483	–586.885	–399.425	8.693
	2500.00	62.325	446.324	391.625	–248.178	136.750	–1363.989	–586.649	–391.619	8.182

References

Phase	H / S	C_p
GAS	Ja1	Ja1

CaC2 CALCIUM DICARBIDE 64.100

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	62.718	69.961	69.961	−59.802	0.000	−80.661	−59.802	−64.888	11.368
	300.00	62.826	70.349	69.962	−59.686	0.116	−80.791	−59.764	−64.920	11.304
	400.00	68.086	89.184	72.494	−53.126	6.676	−88.800	−57.853	−66.932	8.740
	500.00	71.423	104.769	77.436	−46.136	13.666	−98.520	−56.218	−69.398	7.250
	600.00	73.312	117.975	83.121	−38.889	20.913	−109.674	−54.990	−72.157	6.282
	700.00	74.308	129.360	88.932	−31.503	28.299	−122.054	−54.226	−75.085	5.603
	720.00	74.433	131.455	90.084	−30.015	29.787	−124.663	−54.130	−75.683	5.491
			7.671		5.523					
SOL−B	720.00	71.265	139.125	90.084	−24.492	35.310	−124.663	−48.607	−75.683	5.491
	800.00	71.786	146.661	95.371	−18.770	41.032	−136.099	−49.384	−78.600	5.132
	900.00	72.438	155.154	101.550	−11.559	48.243	−151.197	−49.709	−82.238	4.773
	1000.00	73.091	162.820	107.300	−4.283	55.519	−167.102	−50.555	−85.812	4.482
	1100.00	73.743	169.817	112.670	3.059	62.861	−183.739	−51.888	−89.277	4.239
	1200.00	74.395	176.261	117.704	10.466	70.268	−201.047	−60.628	−91.984	4.004

References

Phase	H / S	C_p
SOL−A	Nb1	Pa3
SOL−B	Pa3	Pa3

80.102

CALCIUM CYANAMIDE

CaCN2

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	83.241	81.588	81.588	−350.619	0.000	−374.944	−350.619	−303.755	53.217
	300.00	83.430	82.103	81.590	−350.465	0.154	−375.096	−350.581	−303.464	52.838
	400.00	90.630	107.207	84.963	−341.722	8.897	−384.604	−348.367	−288.084	37.620
	500.00	94.814	127.912	91.544	−332.435	18.184	−396.391	−346.044	−273.283	28.550
	600.00	97.811	145.475	99.106	−322.798	27.821	−410.082	−343.829	−258.942	22.543
	700.00	100.248	160.741	106.844	−312.891	37.728	−425.410	−341.810	−244.957	18.279
	800.00	102.386	174.269	114.442	−302.758	47.861	−442.173	−340.751	−231.154	15.093
	900.00	104.350	186.443	121.777	−292.420	58.199	−460.218	−339.093	−217.558	12.627
	1000.00	106.207	197.534	128.806	−281.891	68.728	−479.425	−337.808	−204.127	10.662
	1100.00	107.043	207.696	135.523	−271.229	79.390	−499.694	−336.928	−190.805	9.061
	1200.00	107.880	217.046	141.932	−260.483	90.136	−520.938	−343.432	−176.928	7.701
	1300.00	108.717	225.714	148.047	−249.653	100.966	−543.081	−341.217	−163.142	6.555
	1400.00	109.554	233.801	153.887	−238.739	111.880	−566.061	−338.995	−149.527	5.579
	1500.00	110.391	241.388	159.470	−227.742	122.877	−589.824	−336.754	−136.072	4.738
	1600.00	111.227	248.539	164.816	−216.661	133.958	−614.324	−334.485	−122.767	4.008
	1700.00	112.064	255.308	169.941	−205.497	145.122	−639.519	−332.179	−109.605	3.368
	1800.00	112.901	261.737	174.864	−194.248	156.371	−665.374	−483.133	−92.616	2.688
	1900.00	113.738	267.863	179.599	−182.916	167.703	−691.857	−479.892	−71.009	1.952
	2000.00	114.575	273.719	184.159	−171.501	179.118	−718.938	−476.604	−49.574	1.295

References

Phase	H / S	C_p
SOL	Nb1/e	e

100.087

CALCIUM CARBONATE (CALCITE)

CaCO3

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	83.471	92.902	92.902	−1206.921	0.000	−1234.620	−1206.921	−1128.811	197.763
	300.00	83.817	93.419	92.903	−1206.766	0.155	−1234.792	−1206.910	−1128.327	196.459
	400.00	96.985	119.548	96.376	−1197.652	9.269	−1245.471	−1205.865	−1102.268	143.941
	500.00	104.547	142.063	103.318	−1187.549	19.372	−1258.580	−1204.373	−1076.538	112.465
	600.00	109.872	161.616	111.441	−1176.816	30.105	−1273.785	−1202.818	−1051.117	91.508
	700.00	114.144	178.884	119.866	−1165.609	41.312	−1290.827	−1201.338	−1025.952	76.558
	800.00	117.863	194.373	128.228	−1154.005	52.916	−1309.503	−1200.705	−1000.901	65.352
	900.00	121.266	208.454	136.371	−1142.046	64.875	−1329.655	−1199.358	−976.009	56.646
	1000.00	124.474	221.398	144.235	−1129.758	77.163	−1351.156	−1198.266	−951.253	49.688
	1100.00	127.554	233.407	151.802	−1117.156	89.765	−1373.903	−1197.413	−926.595	44.000
	1200.00	130.541	244.634	159.075	−1104.250	102.671	−1397.811	−1203.733	−901.388	39.236

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	Pa3	Tk1	TPT= 298./ 753.

$CaCO_3$[A] CALCIUM CARBONATE (ARAGONITE) 100.087

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	82.299	88.701	88.701	−1207.126	0.000	−1233.572	−1207.126	−1127.764	197.580
	300.00	82.542	89.211	88.702	−1206.974	0.152	−1233.737	−1207.118	−1127.272	196.275
	400.00	92.678	114.459	92.076	−1198.173	8.953	−1243.956	−1206.385	−1100.753	143.744
	500.00	99.824	135.939	98.754	−1188.533	18.593	−1256.503	−1205.358	−1074.461	112.248
	600.00	105.778	154.677	106.545	−1178.247	28.879	−1271.053	−1204.249	−1048.385	91.270
	700.00	111.167	171.393	114.636	−1167.396	39.730	−1287.371	−1203.125	−1022.497	76.300

References

Phase	H / S	C_p	Remarks
SOL	Nb1	Pa3	Tk1 TPT= 1073.

$CaMg(CO_3)_2$ DOLOMITE 184.401

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	157.531	155.226	155.226	−2326.304	0.000	−2372.585	−2326.304	−2163.576	379.049
	300.00	157.978	156.202	155.229	−2326.012	0.292	−2372.873	−2326.300	−2162.566	376.536
	400.00	176.523	204.406	161.676	−2309.212	17.092	−2390.974	−2325.613	−2108.070	275.286
	500.00	189.431	245.243	174.410	−2290.887	35.417	−2413.509	−2324.489	−2053.811	214.560
	600.00	200.119	280.747	189.237	−2271.398	54.906	−2439.846	−2323.283	−1999.788	174.097
	700.00	209.760	312.329	204.606	−2250.898	75.406	−2469.528	−2322.074	−1945.968	145.210
	800.00	218.843	340.936	219.886	−2229.464	96.840	−2502.213	−2321.563	−1892.232	123.550
	900.00	227.601	367.220	234.815	−2207.140	119.164	−2537.638	−2320.132	−1838.651	106.713
	1000.00	236.158	391.644	249.291	−2183.951	142.353	−2575.595	−2327.657	−1784.472	93.211
	1100.00	244.582	414.548	263.284	−2159.913	166.391	−2615.916	−2326.085	−1730.228	82.162
	1200.00	252.917	436.188	276.799	−2135.037	191.267	−2658.462	−2331.266	−1675.519	72.933

References

Phase	H / S	C_p
SOL	Nb1	M1

75.531 CALCIUM MONOCHLORIDE (GAS) **CaCl**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	35.667	241.526	241.526	−104.600	0.000	−176.611	−104.600	−131.000	22.951
	300.00	35.686	241.747	241.527	−104.534	0.066	−177.058	−104.612	−131.164	22.838
	400.00	36.469	252.132	242.937	−100.922	3.678	−201.775	−105.308	−139.912	18.271
	500.00	36.910	260.321	245.624	−97.251	7.349	−227.412	−106.116	−148.472	15.511
	600.00	37.183	267.076	248.653	−93.546	11.054	−253.792	−107.086	−156.855	13.655
	700.00	37.367	272.823	251.706	−89.818	14.782	−280.794	−108.263	−165.060	12.317
	800.00	37.501	277.822	254.664	−86.074	18.526	−308.332	−110.414	−172.989	11.295
	900.00	37.605	282.245	257.488	−82.319	22.281	−336.339	−111.992	−180.720	10.489
	1000.00	37.692	286.212	260.165	−78.554	26.046	−364.765	−113.982	−188.253	9.833
	1100.00	37.768	289.808	262.699	−74.781	29.819	−393.569	−116.382	−195.568	9.287
	1200.00	37.837	293.097	265.097	−71.000	33.600	−422.717	−126.140	−202.029	8.794
	1300.00	37.902	296.128	267.369	−67.213	37.387	−452.180	−127.168	−208.312	8.370
	1400.00	37.964	298.939	269.525	−63.420	41.180	−481.935	−128.194	−214.515	8.004
	1500.00	38.026	301.561	271.574	−59.621	44.979	−511.961	−129.218	−220.645	7.684
	1600.00	38.088	304.017	273.526	−55.815	48.785	−542.242	−130.239	−226.707	7.401
	1700.00	38.151	306.328	275.388	−52.003	52.597	−572.760	−131.257	−232.705	7.150
	1800.00	38.215	308.510	277.168	−48.185	56.415	−603.503	−285.577	−234.679	6.810
	1900.00	38.281	310.578	278.873	−44.360	60.240	−634.458	−285.747	−231.847	6.374
	2000.00	38.348	312.543	280.507	−40.528	64.072	−665.615	−285.920	−229.006	5.981
	2100.00	38.418	314.416	282.078	−36.690	67.910	−696.964	−286.097	−226.156	5.625
	2200.00	38.490	316.205	283.589	−32.845	71.755	−728.495	−286.280	−223.297	5.302
	2300.00	38.564	317.917	285.044	−28.992	75.608	−760.202	−286.471	−220.430	5.006
	2400.00	38.641	319.560	286.449	−25.132	79.468	−792.077	−286.672	−217.555	4.735
	2500.00	38.721	321.139	287.805	−21.264	83.336	−824.112	−286.886	−214.670	4.485

References

Phase	H / S	C_p
GAS	Ja1	Ja1

CaCl2 CALCIUM CHLORIDE 110.983

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	72.858	104.600	104.600	−795.797	0.000	−826.983	−795.797	−748.111	131.066
	300.00	72.924	105.051	104.601	−795.662	0.135	−827.177	−795.772	−747.816	130.206
	400.00	75.656	126.445	107.500	−788.219	7.578	−838.797	−794.370	−732.040	95.595
	500.00	77.134	143.500	113.052	−780.573	15.224	−852.323	−792.988	−716.619	74.865
	600.00	78.202	157.659	119.340	−772.805	22.992	−867.401	−791.714	−701.467	61.068
	700.00	79.379	169.799	125.701	−764.929	30.868	−883.788	−790.581	−686.518	51.229
	800.00	80.944	180.495	131.895	−756.917	38.880	−901.313	−790.315	−671.630	43.853
	900.00	83.051	190.145	137.839	−748.722	47.075	−919.852	−789.317	−656.856	38.123
	1000.00	85.789	199.031	143.519	−740.285	55.512	−939.316	−788.506	−642.183	33.544
	1045.00	87.243	202.838	145.992	−736.393	59.404	−948.359	−788.183	−635.606	31.771
			27.314		28.543					
LIQ	1045.00	102.533	230.152	145.992	−707.850	87.947	−948.359	−759.640	−635.606	31.771
	1100.00	102.533	235.412	150.333	−702.210	93.587	−961.163	−758.481	−629.108	29.874
	1200.00	102.533	244.333	157.800	−691.957	103.840	−985.157	−763.648	−616.813	26.849
	1300.00	102.533	252.540	164.776	−681.704	114.093	−1010.006	−760.096	−604.721	24.298
	1400.00	102.533	260.139	171.320	−671.450	124.347	−1035.644	−756.553	−592.902	22.121
	1500.00	102.533	267.213	177.479	−661.197	134.600	−1062.016	−753.017	−581.336	20.244
	1600.00	102.533	273.830	183.297	−650.944	144.853	−1089.072	−749.488	−570.005	18.609
	1700.00	102.533	280.046	188.807	−640.690	155.107	−1116.769	−745.967	−558.896	17.173
	1800.00	102.533	285.907	194.040	−630.437	165.360	−1145.069	−895.757	−544.029	15.787
	1900.00	102.533	291.450	199.022	−620.184	175.613	−1173.939	−891.407	−524.607	14.422
	2000.00	102.533	296.710	203.776	−609.931	185.866	−1203.350	−887.071	−505.414	13.200
	2100.00	102.533	301.712	208.322	−599.677	196.120	−1233.273	−882.749	−486.438	12.099
	2200.00	102.533	306.482	212.676	−589.424	206.373	−1263.684	−878.444	−467.667	11.104
	2206.30	102.533	306.775	212.944	−588.778	207.019	−1265.616	−878.174	−466.491	11.044

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja1	BPT= 2206.3, L= 235.1 kJ

110.983 CALCIUM CHLORIDE (GAS) **CaCl2**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	59.325	290.061	290.061	−471.537	0.000	−558.019	−471.537	−479.147	83.944
	300.00	59.358	290.428	290.062	−471.427	0.110	−558.556	−471.537	−479.194	83.435
	400.00	60.571	307.692	292.407	−465.423	6.114	−588.500	−471.574	−481.743	62.909
	500.00	61.178	321.280	296.871	−459.333	12.204	−619.973	−471.748	−484.269	50.591
	600.00	61.523	332.468	301.899	−453.196	18.341	−652.677	−472.105	−486.743	42.375
	700.00	61.738	341.969	306.962	−447.032	24.505	−686.410	−472.684	−489.140	36.500
	800.00	61.880	350.223	311.865	−440.851	30.686	−721.029	−474.250	−491.346	32.082
	900.00	61.978	357.517	316.540	−434.658	36.879	−756.423	−475.253	−493.427	28.638
	1000.00	62.050	364.051	320.970	−428.456	43.081	−792.507	−476.677	−495.374	25.876
	1100.00	62.103	369.967	325.160	−422.248	49.289	−829.213	−478.519	−497.158	23.608
	1200.00	62.143	375.373	329.122	−416.036	55.501	−866.483	−487.726	−498.139	21.683
	1300.00	62.175	380.348	332.874	−409.820	61.717	−904.273	−488.212	−498.988	20.050
	1400.00	62.200	384.957	336.431	−403.601	67.936	−942.541	−488.703	−499.798	18.648
	1500.00	62.221	389.249	339.811	−397.380	74.157	−981.254	−489.200	−500.573	17.432
	1600.00	62.237	393.265	343.028	−391.157	80.380	−1020.382	−489.702	−501.315	16.366
	1700.00	62.251	397.039	346.095	−384.933	86.604	−1059.899	−490.209	−502.025	15.425
	1800.00	62.262	400.597	349.025	−378.707	92.830	−1099.782	−644.026	−498.742	14.473
	1900.00	62.272	403.964	351.829	−372.480	99.057	−1140.012	−643.704	−490.679	13.490
	2000.00	62.280	407.158	354.516	−366.253	105.284	−1180.569	−643.393	−482.634	12.605
	2100.00	62.287	410.197	357.096	−360.024	111.513	−1221.438	−643.096	−474.603	11.805
	2200.00	62.293	413.095	359.576	−353.795	117.742	−1262.604	−642.816	−466.586	11.078
	2300.00	62.298	415.864	361.963	−347.566	123.971	−1304.053	−642.554	−458.582	10.415
	2400.00	62.303	418.515	364.265	−341.336	130.201	−1345.773	−642.314	−450.588	9.807
	2500.00	62.306	421.059	366.486	−335.105	136.432	−1387.752	−642.098	−442.604	9.248

References

Phase	H / S	C_p
GAS	Ja1	Ja1

CaF[g] CALCIUM MONOFLUORIDE (GAS) 59.076

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	33.659	229.644	229.644	−272.295	0.000	−340.763	−272.295	−298.182	52.240
	300.00	33.693	229.852	229.644	−272.233	0.062	−341.188	−272.309	−298.342	51.946
	400.00	35.082	239.754	230.985	−268.787	3.508	−364.689	−273.044	−306.910	40.078
	500.00	35.891	247.677	233.558	−265.235	7.060	−389.074	−273.867	−315.284	32.938
	600.00	36.402	254.269	236.476	−261.619	10.676	−414.180	−274.845	−323.479	28.161
	700.00	36.750	259.908	239.430	−257.960	14.335	−439.896	−276.028	−331.494	24.736
	800.00	37.000	264.833	242.304	−254.272	18.023	−466.138	−278.185	−339.232	22.150
	900.00	37.190	269.202	245.054	−250.562	21.733	−492.844	−279.770	−346.773	20.126
	1000.00	37.339	273.128	247.669	−246.836	25.459	−519.964	−281.767	−354.114	18.497
	1100.00	37.460	276.693	250.148	−243.095	29.200	−547.458	−284.177	−361.236	17.154
	1200.00	37.561	279.957	252.498	−239.344	32.951	−575.292	−293.945	−367.503	15.997
	1300.00	37.648	282.967	254.727	−235.584	36.711	−603.441	−294.987	−373.591	15.011
	1400.00	37.724	285.760	256.845	−231.815	40.480	−631.879	−296.029	−379.598	14.163
	1500.00	37.793	288.365	258.861	−228.039	44.256	−660.586	−297.070	−385.531	13.425
	1600.00	37.857	290.806	260.782	−224.257	48.038	−689.546	−298.111	−391.394	12.778
	1700.00	37.918	293.103	262.616	−220.468	51.827	−718.743	−299.152	−397.193	12.204
	1800.00	37.978	295.272	264.371	−216.673	55.622	−748.162	−453.496	−398.966	11.578
	1900.00	38.038	297.327	266.052	−212.872	59.423	−777.793	−453.693	−395.931	10.885
	2000.00	38.099	299.280	267.665	−209.065	63.230	−807.624	−453.895	−392.886	10.261
	2100.00	38.162	301.140	269.215	−205.252	67.043	−837.646	−454.101	−389.830	9.697
	2200.00	38.229	302.917	270.707	−201.433	70.862	−867.850	−454.315	−386.765	9.183
	2300.00	38.301	304.618	272.144	−197.606	74.689	−898.227	−454.538	−383.689	8.714
	2400.00	38.378	306.249	273.532	−193.772	78.523	−928.771	−454.771	−380.604	8.284
	2500.00	38.461	307.818	274.872	−189.931	82.364	−959.475	−455.016	−377.509	7.888
	2600.00	38.551	309.328	276.168	−186.080	86.215	−990.332	−455.274	−374.404	7.522
	2700.00	38.650	310.785	277.423	−182.220	90.075	−1021.338	−455.548	−371.288	7.183
	2800.00	38.758	312.192	278.640	−178.350	93.945	−1052.488	−455.838	−368.162	6.868
	2900.00	38.875	313.554	279.821	−174.468	97.827	−1083.775	−456.145	−365.025	6.575
	3000.00	39.003	314.874	280.967	−170.574	101.721	−1115.197	−456.473	−361.878	6.301

References

Phase	H / S	C_p
GAS	Ja1,Nb1	Ja1

78.075 CALCIUM FLUORIDE **CaF2**

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	68.590	68.576	68.576	−1225.912	0.000	−1246.358	−1225.912	−1173.545	205.600
	300.00	68.771	69.001	68.577	−1225.785	0.127	−1246.485	−1225.890	−1173.220	204.276
	400.00	73.863	89.636	71.356	−1218.600	7.312	−1254.455	−1224.493	−1155.867	150.941
	500.00	76.222	106.382	76.740	−1211.091	14.821	−1264.282	−1223.040	−1138.880	118.978
	600.00	78.518	120.478	82.885	−1203.356	22.556	−1275.643	−1221.637	−1122.180	97.694
	700.00	81.089	132.771	89.151	−1195.378	30.534	−1288.318	−1220.275	−1105.712	82.509
	800.00	83.919	143.781	95.303	−1187.130	38.782	−1302.155	−1219.674	−1089.346	71.127
	900.00	86.950	153.839	101.256	−1178.588	47.324	−1317.043	−1218.251	−1073.142	62.284
	1000.00	90.128	163.163	106.986	−1169.735	56.177	−1332.898	−1216.963	−1057.089	55.217
	1100.00	93.413	171.906	112.494	−1160.559	65.353	−1349.656	−1215.789	−1041.159	49.441
	1200.00	96.780	180.178	117.793	−1151.050	74.862	−1367.264	−1221.664	−1024.716	44.605
	1300.00	100.207	188.060	122.897	−1141.201	84.711	−1385.679	−1218.491	−1008.430	40.519
	1400.00	103.680	195.613	127.823	−1131.007	94.905	−1404.865	−1214.988	−992.400	37.027
	1424.00	104.519	197.382	128.981	−1128.508	97.404	−1409.581	−1214.098	−988.592	36.263
			3.350		4.770					
SOL−B	1424.00	122.884	200.732	128.981	−1123.738	102.174	−1409.581	−1209.328	−988.592	36.263
	1500.00	123.679	207.142	132.780	−1114.369	111.543	−1425.082	−1205.056	−976.923	34.019
	1600.00	124.725	215.157	137.680	−1101.949	123.963	−1446.200	−1199.355	−961.900	31.403
	1691.00	125.677	222.083	142.037	−1090.556	135.356	−1466.097	−1194.086	−948.541	29.300
			17.567		29.706					
LIQ	1691.00	99.914	239.650	142.037	−1060.850	165.062	−1466.097	−1164.380	−948.541	29.300
	1700.00	99.914	240.180	142.556	−1059.950	165.962	−1468.257	−1164.087	−947.393	29.110
	1800.00	99.914	245.891	148.139	−1049.959	175.953	−1492.563	−1314.141	−930.776	27.010
	1900.00	99.914	251.293	153.428	−1039.968	185.944	−1517.424	−1310.059	−909.590	25.006
	2000.00	99.914	256.418	158.450	−1029.976	195.936	−1542.812	−1305.992	−888.618	23.208
	2100.00	99.914	261.293	163.232	−1019.985	205.927	−1568.700	−1301.941	−867.849	21.587
	2200.00	99.914	265.941	167.796	−1009.993	215.919	−1595.063	−1297.909	−847.272	20.117
	2300.00	99.914	270.382	172.160	−1000.002	225.910	−1621.881	−1293.896	−826.879	18.779
	2400.00	99.914	274.634	176.342	−990.011	235.901	−1649.133	−1289.905	−806.659	17.556
	2500.00	99.914	278.713	180.356	−980.019	245.893	−1676.802	−1285.938	−786.606	16.435
	2600.00	99.914	282.632	184.215	−970.028	255.884	−1704.871	−1281.997	−766.710	15.403
	2700.00	99.914	286.403	187.930	−960.036	265.876	−1733.324	−1278.085	−746.966	14.451
	2800.00	99.914	290.036	191.512	−950.045	275.867	−1762.147	−1274.203	−727.366	13.569
	2803.70	99.914	290.168	191.642	−949.675	276.237	−1763.220	−1274.060	−726.644	13.538

References

Phase	H / S	C_p	Remarks	
SOL−A	Ja1	Ja1		
SOL−B	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja1	BPT= 2803.7, L= 308.7 kJ

CaF2[g] CALCIUM FLUORIDE (GAS) 78.075

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	51.264	273.785	273.785	−784.500	0.000	−866.129	−784.500	−793.316	138.986
	300.00	51.329	274.102	273.786	−784.405	0.095	−866.636	−784.510	−793.370	138.138
	400.00	53.881	289.258	275.835	−779.131	5.369	−894.834	−785.024	−796.247	103.979
	500.00	55.270	301.444	279.778	−773.667	10.833	−924.389	−785.616	−798.987	83.470
	600.00	56.094	311.600	284.259	−768.095	16.405	−955.055	−786.376	−801.593	69.785
	700.00	56.619	320.289	288.801	−762.458	22.042	−986.660	−787.355	−804.055	59.999
	800.00	56.973	327.874	293.221	−756.777	27.723	−1019.077	−789.322	−806.268	52.644
	900.00	57.223	334.600	297.452	−751.067	33.433	−1052.207	−790.730	−808.306	46.913
	1000.00	57.405	340.639	301.474	−745.335	39.165	−1085.974	−792.562	−810.165	42.319
	1100.00	57.541	346.117	305.287	−739.587	44.913	−1120.316	−794.818	−811.819	38.550
	1200.00	57.646	351.128	308.901	−733.828	50.672	−1155.182	−804.442	−812.634	35.373
	1300.00	57.728	355.746	312.330	−728.059	56.441	−1190.528	−805.349	−813.280	32.678
	1400.00	57.794	360.026	315.585	−722.283	62.217	−1226.320	−806.264	−813.855	30.365
	1500.00	57.847	364.016	318.683	−716.501	67.999	−1262.524	−807.188	−814.365	28.359
	1600.00	57.890	367.750	321.634	−710.714	73.786	−1299.114	−808.120	−814.814	26.601
	1700.00	57.926	371.261	324.451	−704.923	79.577	−1336.067	−809.059	−815.203	25.048
	1800.00	57.956	374.573	327.144	−699.129	85.371	−1373.360	−963.310	−811.573	23.551
	1900.00	57.981	377.707	329.724	−693.332	91.168	−1410.975	−963.423	−803.141	22.080
	2000.00	58.002	380.682	332.198	−687.533	96.967	−1448.896	−963.548	−794.702	20.755
	2100.00	58.020	383.512	334.575	−681.732	102.768	−1487.107	−963.688	−786.256	19.557
	2200.00	58.036	386.211	336.861	−675.929	108.571	−1525.594	−963.844	−777.803	18.467
	2300.00	58.049	388.792	339.063	−670.125	114.375	−1564.345	−964.018	−769.343	17.472
	2400.00	58.061	391.262	341.187	−664.319	120.181	−1603.349	−964.214	−760.875	16.560
	2500.00	58.071	393.633	343.238	−658.512	125.988	−1642.594	−964.431	−752.398	15.720
	2600.00	58.079	395.910	345.220	−652.705	131.795	−1682.072	−964.674	−743.912	14.945
	2700.00	58.087	398.102	347.138	−646.897	137.603	−1721.773	−964.945	−735.416	14.227
	2800.00	58.094	400.215	348.996	−641.088	143.412	−1761.690	−965.245	−726.909	13.561
	2900.00	58.099	402.254	350.798	−635.278	149.222	−1801.814	−965.578	−718.392	12.940
	3000.00	58.104	404.224	352.546	−629.468	155.032	−1842.138	−965.946	−709.862	12.360

References

Phase	H / S	C_p
GAS	Ja1	Ja1

41.086 CALCIUM MONOHYDRIDE (GAS) **CaH**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	29.896	201.841	201.841	229.409	0.000	169.230	229.409	201.061	−35.225
	300.00	29.907	202.026	201.842	229.464	0.055	168.857	229.391	200.885	−34.977
	400.00	31.121	210.779	203.027	232.510	3.101	148.198	228.409	191.532	−25.011
	500.00	32.448	217.869	205.308	235.690	6.281	126.755	227.435	182.425	−19.058
	600.00	33.534	223.885	207.915	238.991	9.582	104.660	226.413	173.518	−15.106
	700.00	34.405	229.122	210.578	242.390	12.981	82.004	225.276	164.790	−12.297
	800.00	35.115	233.764	213.192	245.867	16.458	58.855	223.235	156.327	−10.207
	900.00	35.705	237.935	215.713	249.409	20.000	35.267	221.819	148.045	−8.592
	1000.00	36.204	241.724	218.128	253.005	23.596	11.281	220.029	139.940	−7.310
	1100.00	36.634	245.195	220.433	256.647	27.238	−13.067	217.856	132.033	−6.270
	1200.00	37.008	248.399	222.632	260.330	30.921	−37.749	208.343	124.957	−5.439
	1300.00	37.341	251.374	224.730	264.047	34.638	−62.739	207.572	118.040	−4.743
	1400.00	37.640	254.153	226.733	267.797	38.388	−88.017	206.810	111.182	−4.148
	1500.00	37.915	256.759	228.649	271.574	42.165	−113.564	206.055	104.377	−3.635
	1600.00	38.172	259.214	230.483	275.379	45.970	−139.364	205.305	97.623	−3.187
	1700.00	38.418	261.536	232.242	279.208	49.799	−165.403	204.559	90.916	−2.794
	1800.00	38.660	263.739	233.931	283.062	53.653	−191.667	50.514	88.216	−2.560
	1900.00	38.903	265.836	235.556	286.941	57.532	−218.147	50.619	90.308	−2.483
	2000.00	39.152	267.837	237.120	290.843	61.434	−244.831	50.725	92.394	−2.413

References

Phase	H / S	C_p
GAS	Tk1	Pa3

CaH2 CALCIUM HYDRIDE 42.094

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	40.999	41.401	41.401	−176.983	0.000	−189.327	−176.983	−138.015	24.180
	300.00	41.068	41.655	41.401	−176.907	0.076	−189.403	−177.007	−137.773	23.988
	400.00	44.781	53.978	43.057	−172.615	4.368	−194.206	−178.195	−124.509	16.259
	500.00	48.495	64.369	46.305	−167.951	9.032	−200.135	−179.147	−110.972	11.593
	600.00	52.208	73.539	50.094	−162.916	14.067	−207.039	−179.899	−97.264	8.468
	700.00	55.921	81.866	54.046	−157.509	19.474	−214.815	−180.497	−83.442	6.227
	800.00	59.634	89.575	58.011	−151.732	25.251	−223.392	−181.714	−69.452	4.535
	900.00	63.347	96.814	61.924	−145.582	31.401	−232.715	−182.010	−55.402	3.215
	1000.00	67.061	103.680	65.759	−139.062	37.921	−242.742	−182.377	−41.315	2.158
	1053.00	69.029	107.194	67.757	−135.456	41.527	−248.331	−182.603	−33.833	1.678
			6.357		6.694					
SOL−B	1053.00	69.036	113.551	67.757	−128.762	48.221	−248.331	−175.909	−33.833	1.678
	1100.00	69.036	116.565	69.778	−125.517	51.466	−253.739	−176.168	−27.486	1.305
	1200.00	69.036	122.572	73.931	−118.613	58.370	−265.700	−183.998	−13.318	0.580
	1273.00	69.036	126.649	76.838	−113.574	63.409	−274.798	−183.370	−2.954	0.121
			17.281		21.999					
LIQ	1273.00	74.998	143.930	76.838	−91.575	85.408	−274.798	−161.371	−2.954	0.121
	1300.00	74.998	145.504	78.248	−89.550	87.433	−278.706	−160.984	0.402	−0.016
	1400.00	74.998	151.062	83.253	−82.050	94.933	−293.537	−159.578	12.764	−0.476
	1500.00	74.998	156.237	87.948	−74.550	102.433	−308.905	−158.215	25.026	−0.871
	1600.00	74.998	161.077	92.369	−67.050	109.933	−324.774	−156.895	37.199	−1.214
	1700.00	74.998	165.624	96.546	−59.551	117.432	−341.111	−155.617	49.290	−1.515
	1800.00	74.998	169.911	100.504	−52.051	124.932	−357.890	−307.684	65.271	−1.894
	1900.00	74.998	173.965	104.264	−44.551	132.432	−375.085	−305.643	85.935	−2.363
	2000.00	74.998	177.812	107.846	−37.051	139.932	−392.676	−303.645	106.493	−2.781

References

Phase	H / S	C_p
SOL−A	Tk1	Pa3
SOL−B	Pa3	Pa3
LIQ	Pa3	Pa3

136.057

CALCIUM HYDROGEN PHOSPHATE **CaHPO4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	110.039	111.380	111.380	−1814.390	0.000	−1847.598	−1814.390	−1681.193	294.538
	300.00	110.699	112.063	111.382	−1814.186	0.204	−1847.805	−1814.412	−1680.366	292.578
	400.00	135.837	147.756	116.078	−1801.719	12.671	−1860.821	−1815.166	−1635.442	213.567
	500.00	150.431	179.748	125.678	−1787.355	27.035	−1877.229	−1813.707	−1590.657	166.175
	600.00	160.877	208.139	137.101	−1771.767	42.623	−1896.650	−1811.394	−1546.254	134.613
	700.00	169.362	233.593	149.098	−1755.244	59.146	−1918.759	−1808.548	−1502.282	112.102
	800.00	176.804	256.703	161.126	−1737.929	76.461	−1943.291	−1806.057	−1458.655	95.240
	900.00	183.638	277.926	172.941	−1719.903	94.487	−1970.037	−1802.433	−1415.446	82.150
	1000.00	190.096	297.611	184.435	−1701.214	113.176	−1998.825	−1798.686	−1372.647	71.700

References

Phase	H / S	C_p
SOL	Nb1	Nb1,e

172.088

CALCIUM HYDROGEN PHOSPHATE DIHYDRATE **CaHPO4*2H2O**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	196.945	189.535	189.535	−2403.708	0.000	−2460.218	−2403.708	−2154.724	377.499
	300.00	197.605	190.755	189.539	−2403.343	0.365	−2460.570	−2403.730	−2153.179	374.902
	400.00	222.743	251.450	197.644	−2382.185	21.523	−2482.765	−2404.577	−2069.409	270.237
	500.00	237.337	302.834	213.680	−2359.131	44.577	−2510.548	−2403.331	−1985.741	207.449
	600.00	247.783	347.070	232.311	−2334.853	68.855	−2543.095	−2401.345	−1902.400	165.619
	700.00	256.268	385.921	251.536	−2309.639	94.069	−2579.783	−2398.939	−1819.429	135.767
	800.00	263.710	420.635	270.542	−2283.633	120.075	−2620.141	−2397.000	−1736.730	113.397

References

Phase	H / S	C_p
SOL	Nb1	e

CaI[g] CALCIUM MONOIODIDE (GAS) 166.982

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	36.648	261.317	261.317	−5.063	0.000	−82.975	−5.063	−53.311	9.340
	300.00	36.656	261.543	261.317	−4.995	0.068	−83.458	−5.092	−53.610	9.334
	400.00	37.026	272.144	262.760	−1.310	3.753	−110.167	−14.800	−69.254	9.044
	500.00	37.247	280.432	265.496	2.405	7.468	−137.811	−37.876	−80.622	8.423
	600.00	37.384	287.236	268.569	6.137	11.200	−166.204	−38.877	−89.081	7.755
	700.00	37.475	293.006	271.658	9.880	14.943	−195.224	−40.082	−97.356	7.265
	800.00	37.540	298.014	274.646	13.631	18.694	−224.780	−42.259	−105.351	6.879
	900.00	37.590	302.439	277.493	17.388	22.451	−254.807	−43.864	−113.145	6.567
	1000.00	37.632	306.402	280.190	21.149	26.212	−285.253	−45.880	−120.739	6.307
	1100.00	37.671	309.990	282.738	24.914	29.977	−316.075	−48.309	−128.111	6.083
	1200.00	37.707	313.269	285.148	28.683	33.746	−347.240	−58.096	−134.627	5.860
	1300.00	37.743	316.289	287.429	32.456	37.519	−378.720	−59.156	−140.961	5.664
	1400.00	37.780	319.087	289.591	36.232	41.295	−410.491	−60.216	−147.214	5.493
	1500.00	37.819	321.695	291.646	40.012	45.075	−442.531	−61.275	−153.392	5.342
	1600.00	37.860	324.137	293.601	43.796	48.859	−474.824	−62.333	−159.498	5.207
	1700.00	37.904	326.434	295.465	47.584	52.647	−507.354	−63.390	−165.539	5.086
	1800.00	37.950	328.602	297.247	51.376	56.439	−540.107	−217.749	−167.553	4.862
	1900.00	38.000	330.655	298.951	55.174	60.237	−573.071	−217.960	−164.759	4.530
	2000.00	38.054	332.605	300.586	58.977	64.040	−606.234	−218.174	−161.953	4.230
	2100.00	38.110	334.463	302.155	62.785	67.848	−639.589	−218.393	−159.137	3.958
	2200.00	38.171	336.238	303.664	66.599	71.662	−673.124	−218.618	−156.310	3.711
	2300.00	38.235	337.936	305.118	70.419	75.482	−706.834	−218.851	−153.472	3.485
	2400.00	38.302	339.565	306.519	74.246	79.309	−740.709	−219.093	−150.625	3.278
	2500.00	38.374	341.130	307.873	78.079	83.142	−774.744	−219.348	−147.767	3.087

References

Phase	H / S	C_p
GAS	Ja1	Ja1

293.887 CALCIUM IODIDE **CaI2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	77.158	145.269	145.269	−536.807	0.000	−580.119	−536.807	−533.141	93.404
	300.00	77.195	145.746	145.270	−536.664	0.143	−580.388	−536.812	−533.118	92.824
	400.00	79.170	168.224	148.321	−528.846	7.961	−596.136	−553.207	−531.280	69.378
	500.00	81.144	186.102	154.149	−520.830	15.977	−613.881	−596.078	−521.681	54.500
	600.00	83.119	201.071	160.755	−512.617	24.190	−633.260	−594.474	−506.952	44.134
	700.00	85.094	214.032	167.460	−504.206	32.601	−654.029	−592.892	−492.491	36.750
	800.00	87.069	225.524	174.013	−495.598	41.209	−676.018	−592.098	−478.162	31.221
	900.00	89.044	235.893	180.322	−486.793	50.014	−699.097	−590.544	−464.016	26.931
	1000.00	91.019	245.377	186.360	−477.789	59.018	−723.167	−589.212	−450.030	23.507
	1052.00	92.046	250.017	189.392	−473.030	63.777	−736.048	−588.608	−442.809	21.987
			39.772		41.840					
LIQ	1052.00	103.345	289.789	189.392	−431.190	105.617	−736.048	−546.768	−442.809	21.987
	1100.00	103.345	294.400	193.875	−426.229	110.578	−750.069	−545.743	−438.089	20.803
	1200.00	103.345	303.392	202.632	−415.895	120.912	−779.965	−550.866	−427.769	18.620
	1300.00	103.345	311.664	210.705	−405.560	131.247	−810.724	−547.268	−417.657	16.782
	1400.00	103.345	319.323	218.193	−395.226	141.581	−842.278	−543.676	−407.822	15.216
	1500.00	103.345	326.453	225.176	−384.891	151.916	−874.571	−540.090	−398.243	13.868
	1600.00	103.345	333.123	231.716	−374.557	162.250	−907.553	−536.511	−388.903	12.696
	1700.00	103.345	339.388	237.867	−364.222	172.585	−941.182	−532.937	−379.787	11.669
	1800.00	103.345	345.295	243.673	−353.888	182.919	−975.419	−682.673	−366.918	10.648
	1900.00	103.345	350.882	249.170	−343.553	193.254	−1010.230	−678.269	−349.496	9.608
	2000.00	103.345	356.183	254.389	−333.219	203.588	−1045.585	−673.877	−332.306	8.679
	2025.00	103.345	357.467	255.654	−330.635	206.172	−1054.506	−672.780	−328.043	8.462

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja1	BPT= 2025., L= 179.4 kJ

CaI2[g] CALCIUM IODIDE (GAS) 293.887

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	60.625	327.549	327.549	−258.153	0.000	−355.812	−258.153	−308.834	54.106
	300.00	60.646	327.924	327.550	−258.041	0.112	−356.418	−258.188	−309.149	53.828
	400.00	61.382	345.487	329.940	−251.934	6.219	−390.129	−276.295	−325.273	42.476
	500.00	61.723	359.225	334.473	−245.777	12.376	−425.389	−321.025	−333.189	34.808
	600.00	61.909	370.496	339.566	−239.595	18.558	−461.892	−321.451	−335.585	29.215
	700.00	62.022	380.049	344.684	−233.398	24.755	−499.432	−322.084	−337.894	25.214
	800.00	62.096	388.336	349.634	−227.191	30.962	−537.860	−323.691	−340.004	22.200
	900.00	62.148	395.653	354.349	−220.979	37.174	−577.067	−324.730	−341.986	19.848
	1000.00	62.185	402.203	358.812	−214.762	43.391	−616.965	−326.185	−343.829	17.960
	1100.00	62.213	408.131	363.030	−208.542	49.611	−657.487	−328.056	−345.506	16.407
	1200.00	62.234	413.545	367.018	−202.320	55.833	−698.574	−337.291	−346.378	15.077
	1300.00	62.252	418.527	370.791	−196.096	62.057	−740.181	−337.803	−347.115	13.947
	1400.00	62.266	423.141	374.367	−189.870	68.283	−782.267	−338.320	−347.812	12.977
	1500.00	62.277	427.437	377.764	−183.643	74.510	−824.799	−338.842	−348.471	12.135
	1600.00	62.287	431.457	380.995	−177.414	80.739	−867.746	−339.368	−349.096	11.397
	1700.00	62.296	435.233	384.076	−171.185	86.968	−911.082	−339.900	−349.688	10.745
	1800.00	62.303	438.794	387.018	−164.955	93.198	−954.785	−493.741	−346.284	10.049
	1900.00	62.310	442.163	389.832	−158.725	99.428	−998.835	−493.441	−338.101	9.295
	2000.00	62.315	445.359	392.530	−152.493	105.660	−1043.212	−493.151	−329.932	8.617
	2100.00	62.321	448.400	395.118	−146.262	111.891	−1087.901	−492.874	−321.778	8.004
	2200.00	62.325	451.299	397.607	−140.029	118.124	−1132.887	−492.612	−313.637	7.447
	2300.00	62.330	454.070	400.002	−133.797	124.356	−1178.157	−492.366	−305.507	6.938
	2400.00	62.334	456.722	402.310	−127.563	130.590	−1223.697	−492.139	−297.388	6.472
	2500.00	62.338	459.267	404.538	−121.330	136.823	−1269.498	−491.933	−289.278	6.044

References

Phase	H / S	C_p
GAS	Ja1	Ja1

CaMg2 CALCIUM 2−MAGNESIUM 88.688

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	75.687	104.265	104.265	−40.166	0.000	−71.253	−40.166	−39.418	6.906
	300.00	75.748	104.734	104.267	−40.026	0.140	−71.446	−40.165	−39.413	6.862
	400.00	78.773	126.948	107.275	−32.297	7.869	−83.076	−40.112	−39.171	5.115
	500.00	81.574	144.829	113.054	−24.278	15.888	−96.693	−40.125	−38.936	4.068
	600.00	84.286	159.942	119.640	−15.985	24.181	−111.950	−40.263	−38.688	3.368
	700.00	86.956	173.136	126.360	−7.423	32.743	−128.618	−40.576	−38.403	2.866
	800.00	89.604	184.920	132.956	1.405	41.571	−146.531	−41.834	−37.969	2.479
	900.00	92.239	195.626	139.333	10.498	50.664	−165.566	−42.493	−37.450	2.174
	990.00	94.603	204.528	144.860	18.906	59.072	−183.578	−61.321	−35.582	1.877

References

Phase	H / S	C_p	Remarks	
SOL	Hu1,e	Hu1,e	Hu1	MPT= 990., L= 49.14 kJ

200.016 CALCIUM MOLYBDATE **CaMoO4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	114.306	122.600	122.600	−1542.235	0.000	−1578.788	−1542.235	−1435.584	251.508
	300.00	114.669	123.308	122.602	−1542.023	0.212	−1579.016	−1542.223	−1434.922	249.842
	400.00	128.451	158.407	127.294	−1529.790	12.445	−1593.153	−1540.959	−1399.318	182.732
	500.00	136.398	187.987	136.555	−1516.519	25.716	−1610.512	−1539.050	−1364.121	142.509
	600.00	142.050	213.377	147.293	−1502.584	39.651	−1630.611	−1536.911	−1329.334	115.729
	700.00	146.617	235.627	158.355	−1488.145	54.090	−1653.084	−1534.718	−1294.911	96.627
	800.00	150.606	255.470	169.276	−1473.280	68.955	−1677.656	−1533.289	−1260.709	82.316
	900.00	154.259	273.422	179.866	−1458.035	84.200	−1704.115	−1531.092	−1226.771	71.200
	1000.00	157.703	289.855	190.055	−1442.435	99.800	−1732.290	−1529.115	−1193.066	62.319

References

Phase	H / S	C_p
SOL	Nb1	Nb1,e

148.247 TRICALCIUM DINITRIDE **Ca3N2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	110.877	104.600	104.600	−430.998	0.000	−462.184	−430.998	−368.007	64.473
	300.00	111.270	105.287	104.602	−430.793	0.205	−462.379	−430.987	−367.616	64.008
	400.00	125.611	139.525	109.173	−418.857	12.141	−474.667	−429.692	−346.656	45.269
	500.00	133.080	168.430	118.214	−405.890	25.108	−490.105	−427.743	−326.117	34.069
	600.00	137.845	193.142	128.693	−392.329	38.669	−508.214	−425.740	−305.982	26.638
	700.00	141.333	214.664	139.470	−378.362	52.636	−528.627	−424.016	−286.164	21.354
	800.00	144.140	233.725	150.083	−364.085	66.913	−551.065	−424.972	−266.288	17.387
	900.00	146.551	250.845	160.344	−349.548	81.450	−575.308	−424.025	−246.521	14.308
	1000.00	148.716	266.399	170.184	−334.783	96.215	−601.182	−424.152	−226.801	11.847
	1100.00	150.721	280.668	179.588	−319.810	111.188	−628.545	−425.366	−207.017	9.830
	1200.00	152.616	293.865	188.568	−304.642	126.356	−657.279	−448.514	−185.224	8.063
	1300.00	154.435	306.153	197.146	−289.289	141.709	−687.287	−445.342	−163.411	6.566
	1400.00	156.197	317.662	205.347	−273.757	157.241	−718.484	−442.030	−141.848	5.292
	1500.00	157.919	328.498	213.200	−258.051	172.947	−750.797	−438.579	−120.526	4.197

References

Phase	H / S	C_p
SOL	Nb1/Pa3	e

Ca(NO3)2 CALCIUM NITRATE 164.088

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	149.364	193.301	193.301	−938.392	0.000	−996.025	−938.392	−743.053	130.180
	300.00	149.888	194.226	193.304	−938.115	0.277	−996.383	−938.379	−741.841	129.166
	400.00	173.689	240.779	199.490	−921.876	16.516	−1018.188	−936.545	−676.548	88.348
	500.00	192.979	281.657	211.916	−903.521	34.871	−1044.350	−933.000	−611.929	63.928
	600.00	210.492	318.407	226.651	−883.338	55.054	−1074.382	−928.137	−548.151	47.721
	700.00	227.167	352.114	242.198	−861.450	76.942	−1107.930	−922.122	−485.280	36.212
	800.00	243.395	383.511	257.921	−837.920	100.472	−1144.729	−915.753	−423.255	27.636
	834.00	248.847	393.754	263.250	−829.551	108.841	−1157.943	−913.043	−402.380	25.202

References

Phase	H / S	C_p	Remarks
SOL	Nb1	La1	La1 MPT= 834., L= 21.3 kJ

Ca(NO3)2*2H2O CALCIUM NITRATE DIHYDRATE 200.118

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	231.496	269.399	269.399	−1540.758	0.000	−1621.079	−1540.758	−1229.019	215.319
	300.00	232.020	270.833	269.404	−1540.329	0.429	−1621.579	−1540.754	−1227.084	213.654
	400.00	255.821	341.014	278.812	−1515.877	24.881	−1652.283	−1539.490	−1122.665	146.605
	500.00	275.111	400.219	297.321	−1489.309	51.449	−1689.419	−1536.636	−1018.762	106.429
	600.00	292.624	451.943	318.868	−1460.913	79.845	−1732.079	−1532.577	−915.550	79.706
	700.00	309.299	498.311	341.245	−1430.812	109.946	−1779.629	−1527.479	−813.101	60.674
	800.00	325.526	540.675	363.562	−1399.068	141.690	−1831.608	−1522.139	−711.359	46.447

References

Phase	H / S	C_p
SOL	Nb1	e

218.134 CALCIUM NITRATE TRIHYDRATE **Ca(NO3)2*3H2O**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	267.060	319.201	319.201	−1838.002	0.000	−1933.172	−1838.002	−1471.567	257.812
	300.00	267.584	320.855	319.207	−1837.507	0.495	−1933.764	−1838.013	−1469.293	255.827
	400.00	291.385	401.267	330.009	−1809.499	28.503	−1970.006	−1837.584	−1346.400	175.822
	500.00	310.675	468.408	351.153	−1779.374	58.628	−2013.578	−1835.625	−1223.804	127.850
	600.00	328.188	526.616	375.649	−1747.422	90.580	−2063.392	−1832.519	−1101.714	95.913
	700.00	344.863	578.467	400.984	−1713.764	124.238	−2118.691	−1828.430	−980.224	73.145
	800.00	361.090	625.580	426.157	−1678.464	159.538	−2178.927	−1824.155	−859.291	56.106

References

Phase	H / S	C_p
SOL	Nb1	e

236.149 CALCIUM NITRATE TETRAHYDRATE **Ca(NO3)2*4H2O**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	300.532	375.301	375.301	−2132.330	0.000	−2244.226	−2132.330	−1713.076	300.124
	300.00	301.056	377.161	375.306	−2131.774	0.556	−2244.922	−2132.359	−1710.474	297.820
	400.00	324.857	467.202	387.422	−2100.418	31.912	−2287.299	−2132.975	−1569.704	204.982
	500.00	344.147	541.813	411.045	−2066.946	65.384	−2337.852	−2132.121	−1428.960	149.282
	600.00	361.660	606.124	438.317	−2031.646	100.684	−2395.320	−2130.176	−1288.494	112.173
	700.00	378.335	663.133	466.436	−1994.642	137.688	−2458.835	−2127.305	−1148.429	85.697
	800.00	394.562	714.716	494.296	−1955.994	176.336	−2527.767	−2124.304	−1008.742	65.864

References

Phase	H / S	C_p
SOL	Nb1	e

CaO CALCIUM OXIDE 56.077

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[–]
SOL	298.15	42.122	38.074	38.074	–635.089	0.000	–646.441	–635.089	–603.509	105.732
	300.00	42.239	38.335	38.075	–635.011	0.078	–646.512	–635.085	–603.313	105.046
	400.00	46.628	51.163	39.794	–630.541	4.548	–651.007	–634.675	–592.775	77.409
	500.00	48.981	61.844	43.167	–625.751	9.338	–656.673	–634.107	–582.365	60.839
	600.00	50.479	70.915	47.055	–620.773	14.316	–663.322	–633.567	–572.069	49.803
	700.00	51.555	78.781	51.038	–615.669	19.420	–670.816	–633.157	–561.854	41.926
	800.00	52.401	85.722	54.948	–610.470	24.619	–679.048	–633.668	–551.594	36.015
	900.00	53.111	91.936	58.719	–605.193	29.896	–687.936	–633.565	–541.345	31.419
	1000.00	53.735	97.565	62.326	–599.850	35.239	–697.415	–633.837	–531.087	27.741
	1100.00	54.302	102.714	65.767	–594.448	40.641	–707.433	–634.486	–520.784	24.730
	1200.00	54.830	107.461	69.046	–588.991	46.098	–717.945	–642.459	–509.789	22.191
	1300.00	55.330	111.870	72.173	–583.483	51.606	–728.914	–641.672	–498.764	20.041
	1400.00	55.810	115.988	75.157	–577.926	57.163	–740.309	–640.850	–487.802	18.200
	1500.00	56.275	119.854	78.009	–572.321	62.768	–752.103	–639.995	–476.900	16.607
	1600.00	56.729	123.501	80.740	–566.671	68.418	–764.273	–639.107	–466.056	15.215
	1700.00	57.173	126.953	83.358	–560.976	74.113	–776.797	–638.187	–455.268	13.989
	1800.00	57.611	130.234	85.871	–555.237	79.852	–789.658	–790.538	–440.571	12.785
	1900.00	58.043	133.360	88.289	–549.454	85.635	–802.838	–788.712	–421.178	11.579
	2000.00	58.470	136.348	90.618	–543.628	91.461	–816.325	–786.859	–401.882	10.496
	2100.00	58.894	139.211	92.864	–537.760	97.329	–830.104	–784.983	–382.680	9.519
	2200.00	59.315	141.961	95.034	–531.850	103.239	–844.163	–783.085	–363.567	8.632
	2300.00	59.734	144.607	97.132	–525.897	109.192	–858.493	–781.167	–344.541	7.825
	2400.00	60.150	147.158	99.164	–519.903	115.186	–873.082	–779.232	–325.598	7.086
	2500.00	60.564	149.622	101.133	–513.867	121.222	–887.921	–777.283	–306.737	6.409
	2600.00	60.977	152.005	103.044	–507.790	127.299	–903.003	–775.321	–287.954	5.785
	2700.00	61.389	154.314	104.900	–501.672	133.417	–918.320	–773.349	–269.246	5.209
	2800.00	61.799	156.554	106.705	–495.512	139.577	–933.864	–771.370	–250.612	4.675
	2900.00	62.208	158.730	108.462	–489.312	145.777	–949.629	–769.385	–232.048	4.180
	3000.00	62.617	160.846	110.173	–483.071	152.018	–965.608	–767.396	–213.554	3.718
	3100.00	63.025	162.906	111.841	–476.789	158.300	–981.796	–765.407	–195.125	3.288
	3200.00	63.432	164.913	113.468	–470.466	164.623	–998.187	–763.419	–176.760	2.885
			24.843		79.496					
LIQ	3200.00	62.760	189.755	113.468	–390.970	244.119	–998.187	–683.923	–176.760	2.885
	3300.00	62.760	191.687	115.809	–384.694	250.395	–1017.260	–682.027	–160.941	2.547
	3400.00	62.760	193.560	118.069	–378.418	256.671	–1036.523	–680.177	–145.178	2.230
	3500.00	62.760	195.379	120.252	–372.142	262.947	–1055.970	–678.376	–129.470	1.932

References

Phase	H / S	C_p
SOL	Co1	Ja1
LIQ	Ja1	Ja1

56.077 CALCIUM OXIDE (GAS) **CaO**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[	J / (K mol)	]	[		kJ / mol		]	[−]
GAS	298.15	32.463	219.711	219.711	43.932	0.000	−21.575	43.932	21.357	−3.742
	300.00	32.489	219.912	219.712	43.992	0.060	−21.981	43.918	21.217	−3.694
	400.00	34.041	229.473	221.005	47.319	3.387	−44.470	43.185	13.762	−1.797
	500.00	35.178	237.201	223.495	50.785	6.853	−67.816	42.428	6.492	−0.678
	600.00	35.880	243.682	226.334	54.340	10.408	−91.869	41.546	−0.616	0.054
	700.00	36.320	249.248	229.220	57.952	14.020	−116.522	40.464	−7.560	0.564
	800.00	36.627	254.119	232.034	61.600	17.668	−141.695	38.402	−14.242	0.930
	900.00	36.890	258.448	234.733	65.276	21.344	−167.328	36.904	−20.737	1.204
	1000.00	37.173	262.349	237.303	68.979	25.047	−193.371	34.992	−27.042	1.413
	1100.00	37.523	265.908	239.744	72.713	28.781	−219.786	32.675	−33.137	1.574
	1200.00	37.981	269.192	242.063	76.487	32.555	−246.543	23.019	−38.387	1.671
	1300.00	38.580	272.254	244.268	80.314	36.382	−273.617	22.125	−43.468	1.747
	1400.00	39.350	275.141	246.372	84.209	40.277	−300.988	21.285	−48.481	1.809
	1500.00	40.320	277.887	248.382	88.190	44.258	−328.641	20.517	−53.437	1.861
	1600.00	41.517	280.526	250.309	92.280	48.348	−356.562	19.844	−58.345	1.905
	1700.00	42.966	283.086	252.162	96.502	52.570	−384.743	19.292	−63.214	1.942
	1800.00	44.692	285.589	253.950	100.883	56.951	−413.177	−134.418	−64.091	1.860
	1900.00	46.720	288.058	255.680	105.451	61.519	−441.860	−133.807	−60.200	1.655
	2000.00	48.632	290.501	257.360	110.213	66.281	−470.788	−133.017	−56.345	1.472
	2100.00	50.696	292.923	258.996	115.179	71.247	−499.959	−132.043	−52.535	1.307
	2200.00	52.754	295.329	260.593	120.352	76.420	−529.372	−130.883	−48.775	1.158
	2300.00	54.740	297.718	262.155	125.728	81.796	−559.025	−129.542	−45.073	1.024
	2400.00	56.598	300.088	263.686	131.296	87.364	−588.915	−128.033	−41.432	0.902
	2500.00	58.283	302.433	265.189	137.042	93.110	−619.041	−126.374	−37.857	0.791
	2600.00	59.765	304.749	266.666	142.946	99.014	−649.401	−124.585	−34.351	0.690
	2700.00	61.024	307.029	268.119	148.987	105.055	−679.990	−122.690	−30.916	0.598
	2800.00	62.048	309.267	269.549	155.143	111.211	−710.805	−120.714	−27.553	0.514
	2900.00	62.839	311.459	270.956	161.389	117.457	−741.842	−118.683	−24.262	0.437
	3000.00	63.402	313.599	272.342	167.703	123.771	−773.095	−116.623	−21.041	0.366
	3100.00	63.752	315.685	273.707	174.062	130.130	−804.560	−114.556	−17.889	0.301
	3200.00	63.911	317.712	275.051	180.447	136.515	−836.230	−112.507	−14.803	0.242
	3300.00	63.902	319.679	276.373	186.839	142.907	−868.100	−110.494	−11.781	0.186
	3400.00	63.759	321.584	277.675	193.223	149.291	−900.164	−108.536	−8.820	0.135
	3500.00	63.514	323.429	278.956	199.587	155.655	−932.415	−106.647	−5.915	0.088

References

Phase	H / S	C_p
GAS	Ja1	Ja1

CaO2 — CALCIUM PEROXIDE — 72.077

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	82.843	83.680	83.680	−652.704	0.000	−677.653	−652.704	−604.139	105.843
	300.00	82.843	84.192	83.682	−652.551	0.153	−677.808	−652.652	−603.838	105.137
	400.00	82.843	108.025	86.931	−644.266	8.438	−687.476	−649.913	−587.984	76.783

References

Phase	H / S	C_p
SOL	Nb1/Ku1	e

CaAl2O4 — CALCIUM 2−ALUMINIUM 4−OXIDE — 158.039

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	120.791	114.223	114.223	−2326.304	0.000	−2360.360	−2326.304	−2208.820	386.976
	300.00	121.323	114.972	114.226	−2326.080	0.224	−2360.572	−2326.326	−2208.091	384.463
	400.00	140.800	152.897	119.264	−2312.851	13.453	−2374.010	−2326.626	−2168.596	283.190
	500.00	151.013	185.512	129.336	−2298.216	28.088	−2390.972	−2326.084	−2129.142	222.430
	600.00	157.580	213.661	141.099	−2282.766	43.538	−2410.963	−2325.322	−2089.824	181.935
	700.00	162.425	238.332	153.263	−2266.756	59.548	−2433.588	−2324.621	−2050.632	153.020
	800.00	166.352	260.285	165.294	−2250.312	75.992	−2458.539	−2324.896	−2011.435	131.333
	900.00	169.745	280.078	176.966	−2233.503	92.801	−2485.573	−2324.747	−1972.268	114.467
	1000.00	172.808	298.123	188.193	−2216.374	109.930	−2514.497	−2346.314	−1931.566	100.895
	1100.00	175.653	314.728	198.951	−2198.949	127.355	−2545.150	−2346.555	−1890.081	89.752
	1200.00	178.352	330.129	209.249	−2181.248	145.056	−2577.402	−2353.957	−1847.949	80.439
	1300.00	180.946	344.508	219.106	−2163.282	163.022	−2611.142	−2352.435	−1805.842	72.560
	1400.00	183.466	358.010	228.550	−2145.061	181.243	−2646.275	−2350.719	−1763.859	65.810
	1500.00	185.929	370.752	237.610	−2126.591	199.713	−2682.719	−2348.810	−1722.006	59.966
	1600.00	188.350	382.829	246.312	−2107.877	218.427	−2720.403	−2346.708	−1680.287	54.856
	1700.00	190.738	394.319	254.683	−2088.922	237.382	−2759.265	−2344.416	−1638.705	50.351
	1800.00	193.101	405.289	262.747	−2069.730	256.574	−2799.249	−2495.238	−1593.299	46.236

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	K7,e	Tk1	DPT= 1875. (LIQ + Ca2Al2O5)

260.000 CALCIUM 4–ALUMINIUM 7–OXIDE **CaAl4O7**

Phase	T	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	198.174	177.820	177.820	–4025.799	0.000	–4078.816	–4025.799	–3818.669	669.015
	300.00	199.133	179.049	177.824	–4025.431	0.368	–4079.146	–4025.848	–3817.384	664.666
	400.00	234.260	241.788	186.139	–4003.540	22.259	–4100.255	–4026.957	–3747.658	489.394
	500.00	252.672	296.218	202.846	–3979.113	46.686	–4127.222	–4026.493	–3677.870	384.224
	600.00	264.504	343.397	222.429	–3953.219	72.580	–4159.256	–4025.535	–3608.231	314.124
	700.00	273.230	384.853	242.731	–3926.314	99.485	–4195.711	–4024.556	–3538.760	264.066
	800.00	280.300	421.813	262.848	–3898.627	127.172	–4236.078	–4024.598	–3469.322	226.523
	900.00	286.408	455.188	282.395	–3870.285	155.514	–4279.954	–4024.400	–3399.934	197.327
	1000.00	291.918	485.653	301.219	–3841.365	184.434	–4327.018	–4067.260	–3327.485	173.810
	1100.00	297.037	513.719	319.278	–3811.915	213.884	–4377.005	–4067.088	–3253.516	154.497
	1200.00	301.890	539.774	336.580	–3781.967	243.832	–4429.695	–4073.916	–3178.945	138.376
	1300.00	306.556	564.123	353.157	–3751.543	274.256	–4484.903	–4071.661	–3104.453	124.738
	1400.00	311.086	587.008	369.051	–3720.660	305.139	–4542.471	–4069.053	–3030.148	113.056
	1500.00	315.515	608.622	384.309	–3689.329	336.470	–4602.262	–4066.094	–2956.041	102.939
	1600.00	319.868	629.124	398.975	–3657.559	368.240	–4664.158	–4062.787	–2882.144	94.092
	1700.00	324.162	648.645	413.092	–3625.357	400.442	–4728.055	–4059.135	–2808.464	86.294
	1800.00	328.410	667.294	426.700	–3592.728	433.071	–4793.859	–4208.444	–2731.044	79.253
	1900.00	332.620	685.164	439.836	–3559.677	466.122	–4861.488	–4203.266	–2649.106	72.829
	2000.00	336.802	702.331	452.534	–3526.205	499.594	–4930.868	–4197.755	–2567.450	67.055

References

Phase	H / S	C_p	Remarks	
SOL	Nb1/Tk1	K7,e	Tk1	DPT= 2035. (LIQ + Ca6Al2O9)

$Ca_2Al_2O_5$ 2–CALCIUM 2–ALUMINIUM 5–OXIDE 214.116

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	164.349	127.085	127.085	–2958.000	0.000	–2995.890	–2958.000	–2801.419	490.797
	300.00	165.056	128.104	127.088	–2957.695	0.305	–2996.126	–2958.015	–2800.447	487.601
	400.00	190.836	179.592	133.933	–2939.736	18.264	–3011.573	–2957.646	–2747.928	358.843
	500.00	204.250	223.750	147.595	–2919.923	38.077	–3031.797	–2956.148	–2695.660	281.614
	600.00	212.796	261.792	163.532	–2899.044	58.956	–3056.119	–2954.394	–2643.727	230.157
	700.00	219.044	295.085	179.997	–2877.439	80.561	–3083.998	–2952.792	–2592.080	193.423
	800.00	224.067	324.672	196.266	–2855.276	102.724	–3115.013	–2953.059	–2540.455	165.875
	900.00	228.377	351.318	212.038	–2832.649	125.351	–3148.835	–2952.264	–2488.938	144.454
	1000.00	232.245	375.583	227.198	–2809.615	148.385	–3185.198	–2973.543	–2435.939	127.240
	1100.00	235.825	397.888	241.714	–2786.209	171.791	–3223.886	–2973.853	–2382.168	113.120
	1200.00	239.207	418.554	255.600	–2762.456	195.544	–3264.721	–2988.633	–2327.111	101.297
	1300.00	242.451	437.829	268.885	–2738.372	219.628	–3307.550	–2985.714	–2272.101	91.294
	1400.00	245.594	455.912	281.605	–2713.969	244.031	–3352.247	–2982.552	–2217.325	82.729
	1500.00	248.663	472.962	293.799	–2689.256	268.744	–3398.698	–2979.148	–2162.783	75.315
	1600.00	251.675	489.106	305.506	–2664.239	293.761	–3446.809	–2975.506	–2108.476	68.835
	1700.00	254.644	504.453	316.761	–2638.922	319.078	–3496.493	–2971.627	–2054.404	63.124
	1800.00	257.578	519.092	327.598	–2613.311	344.689	–3547.676	–3274.120	–1992.640	57.825

References

Phase	H / S	C_p
SOL	Nb1/e	e

270.193 **3–CALCIUM 2–ALUMINIUM 6–OXIDE** **Ca3Al2O6**

Phase	T	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	209.697	205.899	205.899	–3587.801	0.000	–3649.190	–3587.801	–3411.786	597.731
	300.00	210.438	207.198	205.903	–3587.412	0.389	–3649.572	–3587.806	–3410.694	593.855
	400.00	237.572	271.948	214.547	–3564.840	22.961	–3673.620	–3586.884	–3351.743	437.693
	500.00	251.814	326.629	231.646	–3540.309	47.492	–3703.624	–3584.891	–3293.179	344.036
	600.00	260.982	373.400	251.469	–3514.642	73.159	–3738.682	–3582.787	–3235.037	281.635
	700.00	267.754	414.161	271.861	–3488.191	99.610	–3778.104	–3581.033	–3177.225	237.087
	800.00	273.250	450.284	291.949	–3461.133	126.668	–3821.360	–3582.115	–3119.349	203.673
	900.00	278.003	482.748	311.376	–3433.566	154.235	–3868.039	–3581.553	–3061.551	177.688
	1000.00	282.294	512.264	330.011	–3405.548	182.253	–3917.812	–3603.463	–3002.225	156.820
	1100.00	286.285	539.358	347.828	–3377.117	210.684	–3970.411	–3604.799	–2942.044	139.706
	1200.00	290.071	564.432	364.846	–3348.298	239.503	–4025.616	–3627.943	–2879.851	125.357
	1300.00	293.712	587.795	381.108	–3319.108	268.693	–4083.241	–3624.638	–2817.642	113.214
	1400.00	297.248	609.691	396.661	–3289.559	298.242	–4143.126	–3621.066	–2755.697	102.816
	1500.00	300.706	630.317	411.557	–3259.661	328.140	–4205.137	–3617.227	–2694.018	93.814
	1600.00	304.106	649.833	425.845	–3229.420	358.381	–4269.153	–3613.123	–2632.603	85.946
	1700.00	307.460	668.370	439.570	–3198.841	388.960	–4335.071	–3608.756	–2571.453	79.011
	1800.00	310.778	686.038	452.776	–3167.929	419.872	–4402.798	–4064.039	–2498.676	72.510

References

Phase	H / S	C_p	Remarks
SOL	Nb1	K7,e	Tk1 DPT= 1808. (LIQ + CaO)

1386.658 **12–CALCIUM 14–ALUMINIUM 33–OXIDE** **Ca12Al14O33**

Phase	T	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	1084.825	1046.837	1046.837	–19429.998	0.000	–19742.112	–19429.998	–18466.676	3235.285
	300.00	1088.533	1053.559	1046.858	–19427.988	2.010	–19744.055	–19430.076	–18460.698	3214.293
	400.00	1228.412	1388.185	1091.532	–19311.337	118.661	–19866.611	–19428.436	–18137.557	2368.522
	500.00	1307.877	1671.480	1179.951	–19184.233	245.765	–20019.973	–19421.094	–17815.627	1861.186
	600.00	1363.561	1915.091	1282.649	–19050.533	379.465	–20199.587	–19412.394	–17495.348	1523.105
	700.00	1408.018	2128.724	1388.568	–18911.888	518.110	–20401.995	–19404.385	–17176.494	1281.726
	800.00	1446.490	2319.299	1493.210	–18769.126	660.872	–20624.566	–19407.211	–16857.567	1100.686
	900.00	1481.483	2491.718	1594.726	–18622.705	807.293	–20865.252	–19403.269	–16539.156	959.908
	1000.00	1514.315	2649.522	1692.425	–18472.901	957.097	–21122.423	–19552.422	–16210.267	846.737
	1100.00	1545.736	2795.334	1786.144	–18319.889	1110.109	–21394.757	–19553.320	–15876.029	753.890
	1200.00	1576.195	2931.143	1875.966	–18163.786	1266.212	–21681.157	–19640.089	–15534.203	676.186
	1300.00	1605.977	3058.486	1962.081	–18004.672	1425.326	–21980.704	–19619.689	–15192.856	610.456
	1400.00	1635.269	3178.576	2044.725	–17842.607	1587.391	–22292.613	–19596.836	–14853.172	554.179
	1500.00	1664.195	3292.386	2124.141	–17677.631	1752.367	–22616.210	–19571.531	–14515.207	505.464
	1600.00	1692.846	3400.707	2200.568	–17509.777	1920.221	–22950.907	–19543.777	–14179.011	462.897
	1700.00	1721.283	3504.189	2274.230	–17339.069	2090.929	–23296.190	–19513.579	–13844.625	425.394

References

Phase	H / S	C_p
SOL	Nb1	M1

$Ca_3Al_2O_6*6H_2O$ 3–CALCIUM 2–ALUMINIUM 6–OXIDE 6–HYDRATE 378.285

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	432.589	376.560	376.560	–5547.984	0.000	–5660.255	–5547.984	–5005.585	876.958
	300.00	433.672	379.239	376.568	–5547.183	0.801	–5660.954	–5548.059	–5002.219	870.964
	400.00	492.206	512.015	394.277	–5500.889	47.095	–5705.695	–5549.764	–4819.887	629.413
	500.00	550.740	628.136	429.651	–5448.742	99.242	–5762.809	–5546.868	–4637.658	484.493
	600.00	609.274	733.722	471.650	–5390.741	157.243	–5830.974	–5539.483	–4456.436	387.967
	700.00	667.808	832.037	516.184	–5326.887	221.097	–5909.313	–5527.717	–4276.799	319.139

References

Phase	H / S	C_p
SOL	Nb1/e	M1

$CaAl_2SiO_6$ PYROXENE 218.123

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	165.700	141.398	141.398	–3298.201	0.000	–3340.359	–3298.201	–3122.044	546.969
	300.00	166.758	142.427	141.401	–3297.893	0.308	–3340.621	–3298.230	–3120.951	543.406
	400.00	204.708	196.336	148.494	–3279.064	19.137	–3357.598	–3298.025	–3061.807	399.831
	500.00	223.409	244.230	162.960	–3257.566	40.635	–3379.681	–3295.957	–3002.970	313.718
	600.00	234.532	286.020	180.065	–3234.628	63.573	–3406.240	–3293.243	–2944.622	256.352
	700.00	242.078	322.773	197.881	–3210.777	87.424	–3436.717	–3290.404	–2886.744	215.411
	800.00	247.717	355.481	215.574	–3186.275	111.926	–3470.660	–3288.468	–2829.172	184.726
	900.00	252.248	384.928	232.782	–3161.270	136.931	–3507.705	–3286.087	–2771.910	160.877
	1000.00	256.090	411.709	249.356	–3135.848	162.353	–3547.557	–3305.435	–2713.361	141.731
	1100.00	259.482	436.279	265.248	–3110.067	188.134	–3589.973	–3303.483	–2654.250	126.040
	1200.00	262.569	458.991	280.458	–3083.962	214.239	–3634.751	–3308.729	–2594.690	112.944
	1300.00	265.439	480.122	295.014	–3057.560	240.641	–3681.719	–3305.097	–2535.333	101.871
	1400.00	268.153	499.893	308.949	–3030.879	267.322	–3730.730	–3301.318	–2476.261	92.390
	1500.00	270.750	518.483	322.305	–3003.933	294.268	–3781.658	–3297.399	–2417.464	84.184
	1600.00	273.260	536.038	335.120	–2976.732	321.469	–3834.392	–3293.343	–2358.933	77.011
	1700.00	275.702	552.677	347.432	–2949.284	348.917	–3888.835	–3339.332	–2300.213	70.677

References

Phase	H / S	C_p
SOL	Nb1	S5,e

278.207 ANORTHITE **CaAl2Si2O8**

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	211.310	199.280	199.280	−4227.899	0.000	−4287.314	−4227.899	−4002.224	701.173
	300.00	212.394	200.590	199.284	−4227.507	0.392	−4287.684	−4227.935	−4000.823	696.605
	400.00	252.478	267.890	208.187	−4204.018	23.881	−4311.174	−4228.164	−3925.005	512.553
	500.00	274.111	326.750	226.152	−4177.600	50.299	−4340.975	−4226.514	−3849.383	402.142
	600.00	288.480	378.068	247.289	−4149.432	78.467	−4376.272	−4224.105	−3774.175	328.571
	700.00	299.420	423.390	269.272	−4120.017	107.882	−4416.389	−4221.406	−3699.398	276.052
	800.00	308.532	463.982	291.117	−4089.608	138.291	−4460.793	−4219.408	−3624.921	236.683
	900.00	316.582	500.794	312.401	−4058.345	169.554	−4509.060	−4216.737	−3550.775	206.082
	1000.00	323.971	534.536	332.951	−4026.313	201.586	−4560.850	−4235.546	−3475.388	181.536
	1100.00	330.930	565.743	352.713	−3993.565	234.334	−4615.883	−4232.791	−3399.505	161.429
	1200.00	337.595	594.825	371.690	−3960.137	267.762	−4673.928	−4236.962	−3323.258	144.658
	1300.00	344.053	622.104	389.914	−3926.053	301.846	−4734.788	−4231.973	−3247.315	130.479
	1400.00	350.361	647.832	407.427	−3891.331	336.568	−4798.297	−4226.550	−3171.773	118.340
	1500.00	356.558	672.217	424.274	−3855.985	371.914	−4864.310	−4220.696	−3096.633	107.834
	1600.00	362.670	695.424	440.501	−3820.023	407.876	−4932.701	−4214.412	−3021.898	98.655
	1700.00	368.717	717.592	456.153	−3783.453	444.446	−5003.360	−4308.055	−2946.676	90.540
	1800.00	374.714	738.838	471.272	−3746.281	481.618	−5076.188	−4453.769	−2862.847	83.078
	1823.00	376.087	743.604	474.678	−3737.647	490.252	−5093.237	−4451.757	−2842.532	81.447
			44.526		81.170					
LIQ	1823.00	380.744	788.129	474.678	−3656.477	571.422	−5093.237	−4370.587	−2842.532	81.447
	1900.00	380.744	803.881	487.702	−3627.159	600.740	−5154.533	−4363.480	−2778.138	76.376
	2000.00	380.744	823.411	504.004	−3589.085	638.814	−5235.906	−4354.337	−2694.936	70.385
	2100.00	380.744	841.987	519.659	−3551.011	676.888	−5319.184	−4345.293	−2612.189	64.975

References

Phase	H / S	C_p
SOL	Nb1	M1,e
LIQ	Tk1	e

$Ca_2Al_2SiO_7$ GEHLENITE 274.200

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	205.428	209.995	209.995	−3981.499	0.000	−4044.109	−3981.499	−3782.862	662.742
	300.00	206.561	211.269	209.999	−3981.118	0.381	−4044.499	−3981.529	−3781.629	658.440
	400.00	247.365	277.065	218.692	−3958.150	23.349	−4068.976	−3981.244	−3714.953	485.123
	500.00	267.751	334.671	236.266	−3932.296	49.203	−4099.632	−3979.044	−3648.614	381.168
	600.00	280.099	384.659	256.928	−3904.861	76.638	−4135.656	−3976.269	−3582.785	311.909
	700.00	288.653	428.513	278.372	−3876.401	105.098	−4176.360	−3973.516	−3517.424	262.473
	800.00	295.184	467.500	299.622	−3847.196	134.303	−4221.196	−3972.587	−3452.255	225.409
	900.00	300.539	502.586	320.257	−3817.403	164.096	−4269.730	−3970.592	−3387.344	196.596
	1000.00	305.164	534.495	340.109	−3787.113	194.386	−4321.608	−3990.686	−3321.083	173.476
	1100.00	309.312	563.778	359.130	−3756.386	225.113	−4376.542	−3989.840	−3254.169	154.528
	1200.00	313.135	590.858	377.326	−3725.261	256.238	−4434.290	−4003.497	−3186.073	138.686
	1300.00	316.729	616.065	394.732	−3693.766	287.733	−4494.651	−3999.491	−3118.115	125.287
	1400.00	320.157	639.663	411.393	−3661.921	319.578	−4557.450	−3995.284	−3050.473	113.815
	1500.00	323.462	661.865	427.359	−3629.739	351.760	−4622.537	−3990.878	−2983.139	103.882
	1600.00	326.674	682.844	442.677	−3597.231	384.268	−4689.782	−3986.278	−2916.106	95.201
	1700.00	329.813	702.743	457.395	−3564.407	417.092	−4759.070	−4031.665	−2848.919	87.537
	1800.00	332.896	721.682	471.555	−3531.271	450.228	−4830.299	−4333.070	−2771.567	80.429
	1863.00	334.815	733.167	480.209	−3510.238	471.261	−4876.128	−4328.615	−2716.991	76.179

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	S5,e	S5	MPT= 1863.

$Ca_3Al_2Si_3O_{12}$ GROSSULAR 450.446

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	323.138	241.417	241.417	−6646.159	0.000	−6718.137	−6646.159	−6280.407	1100.301
	300.00	325.047	243.422	241.423	−6645.559	0.600	−6718.586	−6646.227	−6278.137	1093.121
	400.00	393.851	347.671	255.169	−6609.158	37.001	−6748.227	−6646.756	−6155.218	803.789
	500.00	428.341	439.629	283.079	−6567.884	78.275	−6787.699	−6644.034	−6032.610	630.222
	600.00	449.324	519.713	315.994	−6523.928	122.231	−6835.756	−6640.249	−5910.673	514.570
	700.00	463.929	590.130	350.229	−6478.228	167.931	−6891.319	−6636.357	−5789.388	432.009
	800.00	475.136	652.839	384.208	−6431.254	214.905	−6953.525	−6635.059	−5668.364	370.106
	900.00	484.366	709.350	417.247	−6383.266	262.893	−7021.681	−6631.977	−5547.725	321.982
	1000.00	492.369	760.806	449.068	−6334.421	311.738	−7095.227	−6651.273	−5425.843	283.417
	1100.00	499.570	808.076	479.585	−6284.819	361.340	−7173.703	−6649.932	−5303.373	251.836
	1200.00	506.225	851.833	508.805	−6234.525	411.634	−7256.725	−6670.346	−5179.135	225.442

References

Phase	H / S	C_p	Remarks	
SOL	S5	S5	Tk1	DPT= 1128. ($CaSiO_3$ + $Ca_2Al_2SiO_7$)

314.238 LAWSONITE **CaAl2Si2O8*2H2O**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	233.048	237.697	237.697	−4858.498	0.000	−4929.367	−4858.498	−4505.188	789.290
	300.00	235.001	239.145	237.702	−4858.065	0.433	−4929.808	−4858.654	−4502.995	784.041
	400.00	305.136	317.711	247.937	−4830.588	27.910	−4957.673	−4863.678	−4383.527	572.430
	500.00	339.929	389.916	269.252	−4798.166	60.332	−4993.124	−4864.928	−4263.296	445.383
	600.00	360.811	453.876	294.802	−4763.054	95.444	−5035.379	−4864.593	−4142.984	360.679
	700.00	375.125	510.629	321.658	−4726.218	132.280	−5083.659	−4863.604	−4022.789	300.184
	800.00	385.938	561.455	348.512	−4688.144	170.354	−5137.308	−4863.183	−3902.661	254.818

References

Phase	H / S	C_p
SOL	Nb1	e

125.698 CALCIUM DIBORATE **CaB2O4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	103.979	104.847	104.847	−2030.960	0.000	−2062.220	−2030.960	−1924.065	337.088
	300.00	104.522	105.492	104.849	−2030.767	0.193	−2062.415	−2030.965	−1923.401	334.894
	400.00	125.019	138.706	109.238	−2019.173	11.787	−2074.655	−2030.617	−1887.574	246.492
	500.00	136.700	167.953	118.122	−2006.045	24.915	−2090.021	−2029.760	−1851.907	193.467
	600.00	144.910	193.636	128.612	−1991.945	39.015	−2108.127	−2028.800	−1816.427	158.134
	700.00	151.482	216.482	139.562	−1977.116	53.844	−2128.654	−2027.856	−1781.106	132.908
	800.00	157.181	237.089	150.486	−1961.678	69.282	−2151.349	−2027.700	−1745.827	113.991
	900.00	162.371	255.906	161.169	−1945.697	85.263	−2176.012	−2026.765	−1710.651	99.284
	1000.00	167.247	273.268	171.522	−1929.214	101.746	−2202.482	−2026.014	−1675.569	87.523
	1100.00	171.917	289.428	181.514	−1912.254	118.706	−2230.626	−2025.430	−1640.554	77.903
	1200.00	176.446	304.582	191.145	−1894.835	136.125	−2260.334	−2031.942	−1604.969	69.862
	1300.00	180.876	318.881	200.426	−1876.968	153.992	−2291.513	−2029.453	−1569.487	63.063
	1400.00	185.235	332.445	209.375	−1858.662	172.298	−2324.085	−2026.682	−1534.207	57.242
	1433.00	186.661	336.777	212.259	−1852.526	178.434	−2335.128	−2025.704	−1522.610	55.501
			51.680		74.057					
LIQ	1433.00	258.153	388.457	212.259	−1778.469	252.491	−2335.128	−1951.647	−1522.610	55.501
	1500.00	258.153	400.253	220.395	−1761.173	269.787	−2361.553	−1944.871	−1502.707	52.329
	1600.00	258.153	416.914	232.162	−1735.358	295.602	−2402.420	−1934.871	−1473.556	48.107
	1700.00	258.153	432.564	243.495	−1709.542	321.418	−2444.902	−1925.001	−1445.027	44.400
	1800.00	258.153	447.320	254.413	−1683.727	347.233	−2488.903	−2068.559	−1413.111	41.007
	1900.00	258.153	461.278	264.936	−1657.912	373.048	−2534.339	−2058.093	−1376.983	37.856
	2000.00	258.153	474.519	275.087	−1632.096	398.864	−2581.135	−2047.750	−1341.403	35.034

References

Phase	H / S	C_p
SOL	Nb1	Ku1,M1
LIQ	Ku1	Ku1

CaB_4O_7 CALCIUM TETRABORATE 195.318

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	157.940	134.700	134.700	–3360.250	0.000	–3400.411	–3360.250	–3167.032	554.851
	300.00	159.081	135.680	134.703	–3359.957	0.293	–3400.661	–3360.278	–3165.833	551.221
	400.00	201.999	188.042	141.551	–3341.653	18.597	–3416.870	–3360.407	–3100.938	404.941
	500.00	226.170	235.914	155.724	–3320.155	40.095	–3438.112	–3359.230	–3036.193	317.189
	600.00	242.962	278.707	172.721	–3296.659	63.591	–3463.883	–3357.573	–2971.736	258.713
	700.00	256.270	317.190	190.657	–3271.677	88.573	–3493.710	–3355.669	–2907.577	216.966
	800.00	267.721	352.173	208.693	–3245.466	114.784	–3527.204	–3354.311	–2843.613	185.669
	900.00	278.092	384.313	226.444	–3218.168	142.082	–3564.050	–3351.932	–2779.918	161.342
	1000.00	287.792	414.120	243.739	–3189.870	170.380	–3603.989	–3349.484	–2716.492	141.895
	1100.00	297.055	441.986	260.509	–3160.624	199.626	–3646.809	–3346.937	–2653.315	125.995
	1200.00	306.019	468.220	276.735	–3130.469	229.781	–3692.332	–3351.214	–2589.759	112.729
	1260.00	311.293	483.278	286.214	–3111.949	248.301	–3720.880	–3348.278	–2551.757	105.786
			89.989		113.386					
LIQ	1260.00	444.759	573.267	286.214	–2998.563	361.687	–3720.880	–3234.892	–2551.757	105.786
	1300.00	444.759	587.167	295.261	–2980.772	379.478	–3744.090	–3227.553	–2530.186	101.664
	1400.00	444.759	620.127	317.303	–2936.297	423.953	–3804.475	–3209.411	–2477.225	92.426
	1500.00	444.759	650.812	338.526	–2891.821	468.429	–3868.039	–3191.544	–2425.551	84.465
	1600.00	444.759	679.517	358.951	–2847.345	512.905	–3934.571	–3173.936	–2375.060	77.538
	1700.00	444.759	706.480	378.609	–2802.869	557.381	–4003.885	–3156.575	–2325.663	71.459
	1800.00	444.759	731.902	397.537	–2758.393	601.857	–4075.816	–3292.756	–2273.317	65.970
	1900.00	444.759	755.949	415.773	–2713.917	646.333	–4150.219	–3275.021	–2217.167	60.954
	2000.00	444.759	778.762	433.357	–2669.441	690.809	–4226.965	–3257.517	–2161.944	56.464

References

Phase	H / S	C_p
SOL	Nb1	Ku1
LIQ	Tk1	Ku1

181.775 DICALCIUM DIBORATE **Ca2B2O5**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	147.081	145.101	145.101	−2734.411	0.000	−2777.673	−2734.411	−2596.585	454.911
	300.00	147.788	146.013	145.104	−2734.138	0.273	−2777.942	−2734.410	−2595.730	451.957
	400.00	174.342	192.614	151.277	−2717.876	16.535	−2794.922	−2733.454	−2549.609	332.945
	500.00	189.217	233.240	163.703	−2699.643	34.768	−2816.263	−2731.715	−2503.842	261.575
	600.00	199.495	268.692	178.311	−2680.182	54.229	−2841.397	−2729.831	−2458.444	214.027
	700.00	207.603	300.073	193.507	−2659.814	74.597	−2869.866	−2728.043	−2413.357	180.087
	800.00	214.554	328.258	208.618	−2638.699	95.712	−2901.306	−2727.920	−2368.330	154.636
	804.00	214.816	329.329	209.216	−2637.841	96.570	−2902.621	−2727.847	−2366.532	153.750
			5.724		4.602					
SOL−B	804.00	226.855	335.053	209.216	−2633.239	101.172	−2902.621	−2723.245	−2366.532	153.750
	900.00	227.819	360.694	224.031	−2611.414	122.997	−2936.039	−2720.854	−2324.087	134.886
	1000.00	228.823	384.749	238.920	−2588.582	145.829	−2973.331	−2719.370	−2280.090	119.100
	1100.00	229.827	406.605	253.186	−2565.650	168.761	−3012.916	−2718.864	−2236.195	106.188
	1200.00	230.831	426.646	266.818	−2542.617	191.794	−3054.592	−2733.192	−2191.071	95.375
	1300.00	231.835	445.162	279.833	−2519.484	214.927	−3098.194	−2730.157	−2146.018	86.228
	1400.00	232.840	462.380	292.264	−2496.250	238.161	−3143.581	−2727.193	−2101.196	78.397
	1500.00	233.844	478.478	304.148	−2472.916	261.495	−3190.633	−2724.287	−2056.584	71.617
	1585.00	234.697	491.391	313.846	−2453.003	281.408	−3231.857	−2721.856	−2018.815	66.531
			63.618		100.834					
LIQ	1585.00	285.349	555.008	313.846	−2352.169	382.242	−3231.857	−2621.022	−2018.815	66.531
	1600.00	285.349	557.696	316.120	−2347.888	386.523	−3240.202	−2619.838	−2013.121	65.722
	1700.00	285.349	574.995	330.844	−2319.354	415.057	−3296.846	−2612.023	−1975.441	60.698
	1800.00	285.349	591.305	344.865	−2290.819	443.592	−3355.168	−2910.952	−1930.290	56.016
	1900.00	285.349	606.733	358.245	−2262.284	472.127	−3415.077	−2901.722	−1876.061	51.577
	2000.00	285.349	621.370	371.039	−2233.749	500.662	−3476.489	−2892.633	−1822.315	47.594

References

Phase	H / S	C_p
SOL−A	Nb1	Ku1
SOL−B	Ku1	Ku1
LIQ	Ku1	Ku1

$Ca_3B_2O_6$ TRICALCIUM DIBORATE 237.852

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	187.861	183.699	183.699	–3429.081	0.000	–3483.851	–3429.081	–3259.831	571.109
	300.00	188.696	184.863	183.702	–3428.733	0.348	–3484.192	–3429.078	–3258.781	567.404
	400.00	219.537	243.917	191.544	–3408.132	20.949	–3505.699	–3427.843	–3202.154	418.158
	500.00	236.153	294.842	207.239	–3385.279	43.802	–3532.701	–3425.708	–3145.972	328.657
	600.00	247.171	338.927	225.597	–3361.083	67.998	–3564.439	–3423.526	–3090.233	269.029
	700.00	255.546	377.682	244.611	–3335.932	93.149	–3600.309	–3421.648	–3034.838	226.462
	800.00	262.511	412.271	263.445	–3310.020	119.061	–3639.837	–3422.438	–2979.408	194.535
	900.00	268.657	443.552	281.747	–3283.456	145.625	–3682.653	–3421.269	–2924.110	169.711
	1000.00	274.295	472.153	299.377	–3256.305	172.776	–3728.458	–3421.080	–2868.889	149.855
	1100.00	279.600	498.547	316.299	–3228.608	200.473	–3777.010	–3421.861	–2813.640	133.609
	1200.00	284.679	523.094	332.521	–3200.393	228.688	–3828.106	–3444.437	–2756.429	119.984
	1300.00	289.598	546.076	348.074	–3171.678	257.403	–3881.577	–3440.540	–2699.251	108.457
	1400.00	294.402	567.714	362.997	–3142.477	286.604	–3937.277	–3436.345	–2642.384	98.589
	1500.00	299.120	588.187	377.333	–3112.801	316.280	–3995.081	–3431.846	–2585.828	90.047
	1600.00	303.773	607.640	391.124	–3082.655	346.426	–4054.880	–3427.041	–2529.582	82.582
	1700.00	308.375	626.195	404.411	–3052.048	377.033	–4116.579	–3421.927	–2473.646	76.006
	1760.00	311.118	636.938	412.155	–3033.463	395.618	–4154.474	–3879.636	–2438.837	72.382
			84.393		148.532					
LIQ	1760.00	393.296	721.332	412.155	–2884.931	544.150	–4154.474	–3731.104	–2438.837	72.382
	1800.00	393.296	730.170	419.124	–2869.199	559.882	–4183.505	–3724.634	–2409.540	69.923
	1900.00	393.296	751.434	436.060	–2829.869	599.212	–4257.595	–3708.566	–2336.919	64.246
	2000.00	393.296	771.608	452.337	–2790.540	638.541	–4333.756	–3692.655	–2265.139	59.159

References

Phase	H / S	C_p
SOL	Nb1	Ku1
LIQ	Tk1	Ku1

Ca(OCl)Cl CALCIUM CHLORIDE HYPOCHLORITE 126.983

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	100.271	112.968	112.968	–746.400	0.000	–780.081	–746.400	–670.627	117.491
	300.00	100.374	113.589	112.970	–746.214	0.186	–780.291	–746.351	–670.157	116.685
	400.00	105.939	143.227	116.973	–735.899	10.501	–793.189	–743.563	–645.171	84.251
	500.00	111.504	167.464	124.717	–725.027	21.373	–808.759	–740.484	–620.924	64.867

References

Phase	H / S	C_p
SOL	Nb1/e	e

215.770

CALCIUM DIIRON TETRAOXIDE — CaFe2O4

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	150.237	145.352	145.352	−1520.340	0.000	−1563.677	−1520.340	−1412.731	247.505
	300.00	150.670	146.283	145.355	−1520.062	0.278	−1563.947	−1520.310	−1412.063	245.862
	400.00	168.380	192.272	151.505	−1504.033	16.307	−1580.942	−1518.050	−1376.292	179.725
	500.00	180.397	231.197	163.651	−1486.567	33.773	−1602.166	−1515.099	−1341.186	140.113
	600.00	190.174	264.973	177.784	−1468.027	52.313	−1627.011	−1511.912	−1306.701	113.758
	700.00	198.894	294.953	192.420	−1448.567	71.773	−1655.034	−1508.687	−1272.754	94.974
	800.00	207.049	322.049	206.957	−1428.266	92.074	−1685.905	−1506.334	−1239.172	80.910
	900.00	214.877	346.890	221.143	−1407.168	113.172	−1719.369	−1503.581	−1205.950	69.992
	1000.00	222.501	369.925	234.883	−1385.298	135.042	−1755.223	−1502.071	−1172.977	61.270
	1100.00	229.992	391.484	248.150	−1362.672	157.668	−1793.305	−1501.860	−1140.048	54.136
	1200.00	237.393	411.814	260.949	−1339.302	181.038	−1833.479	−1507.501	−1106.634	48.171
	1300.00	244.729	431.106	273.302	−1315.196	205.144	−1875.633	−1500.376	−1073.514	43.134
	1400.00	252.020	449.509	285.236	−1290.358	229.982	−1919.671	−1492.748	−1040.961	38.839
	1500.00	259.276	467.144	296.780	−1264.793	255.547	−1965.509	−1484.616	−1008.972	35.136

References

Phase	H / S	C_p	Remarks
SOL	Nb1	Ku1,e	Tk1 DPT= 1493. (LIQ + Ca2Fe2O5)

271.847

DICALCIUM DIIRON PENTAOXIDE — Ca2Fe2O5

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	190.070	188.782	188.782	−2139.279	0.000	−2195.564	−2139.279	−2001.686	350.687
	300.00	190.609	189.959	188.786	−2138.927	0.352	−2195.915	−2139.249	−2000.833	348.376
	400.00	212.239	248.044	196.559	−2118.685	20.594	−2217.902	−2136.835	−1955.021	255.300
	500.00	226.363	297.002	211.881	−2096.719	42.560	−2245.220	−2133.607	−1909.932	199.529
	600.00	237.533	339.289	229.671	−2073.508	65.771	−2277.081	−2130.188	−1865.518	162.408
	700.00	247.308	376.652	248.050	−2049.258	90.021	−2312.914	−2126.866	−1821.672	135.935
	800.00	256.339	410.271	266.260	−2024.071	115.208	−2352.287	−2125.337	−1778.101	116.098
	900.00	264.939	440.963	283.991	−1998.004	141.275	−2394.871	−2122.790	−1734.861	100.689
	1000.00	273.270	469.310	301.123	−1971.092	168.187	−2440.402	−2121.852	−1691.828	88.372
	1100.00	281.425	495.739	317.627	−1943.356	195.923	−2488.669	−2122.582	−1648.763	78.293
	1200.00	289.461	520.571	333.515	−1914.811	224.468	−2539.496	−2136.478	−1604.495	69.842
	1300.00	297.413	544.055	348.815	−1885.467	253.812	−2592.738	−2128.835	−1560.469	62.700
	1400.00	305.304	566.385	363.564	−1855.330	283.949	−2648.269	−2120.644	−1517.053	56.602
	1500.00	313.150	587.716	377.802	−1824.407	314.872	−2705.982	−2111.903	−1474.241	51.338
	1600.00	320.962	608.176	391.565	−1792.701	346.578	−2765.783	−2102.612	−1432.030	46.751
	1700.00	328.746	627.868	404.890	−1760.216	379.063	−2827.592	−2094.671	−1390.379	42.721

References

Phase	H / S	C_p	Remarks
SOL	Nb1	Ku1,e	Tk1 DPT= 1713. (LIQ + CaO)

CaOH[g] CALCIUM MONOHYDROXIDE (GAS) 57.085

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	44.620	235.459	235.459	–193.887	0.000	–264.089	–193.887	–201.676	35.333
	300.00	44.710	235.736	235.460	–193.804	0.083	–264.525	–193.905	–201.724	35.123
	400.00	48.151	249.125	237.262	–189.142	4.745	–288.792	–194.755	–204.197	26.665
	500.00	50.041	260.091	240.765	–184.224	9.663	–314.270	–195.522	–206.469	21.570
	600.00	51.262	269.329	244.776	–179.155	14.732	–340.753	–196.355	–208.582	18.159
	700.00	52.160	277.301	248.866	–173.982	19.905	–368.093	–197.345	–210.544	15.711
	800.00	52.894	284.316	252.868	–168.729	25.158	–396.181	–199.278	–212.259	13.859
	900.00	53.545	290.584	256.716	–163.406	30.481	–424.932	–200.617	–213.806	12.409
	1000.00	54.156	296.257	260.391	–158.021	35.866	–454.278	–202.348	–215.182	11.240
	1100.00	54.751	301.447	263.891	–152.576	41.311	–484.167	–204.473	–216.366	10.274
	1200.00	55.348	306.236	267.223	–147.071	46.816	–514.554	–213.938	–216.722	9.434
	1300.00	55.876	310.687	270.397	–141.510	52.377	–545.403	–214.658	–216.925	8.716
	1400.00	56.379	314.846	273.425	–135.897	57.990	–576.682	–215.362	–217.073	8.099
	1500.00	56.833	318.752	276.318	–130.236	63.651	–608.364	–216.055	–217.171	7.563
	1600.00	57.247	322.433	279.086	–124.532	69.355	–640.425	–216.738	–217.223	7.092
	1700.00	57.625	325.915	281.739	–118.788	75.099	–672.844	–217.416	–217.232	6.675
	1800.00	57.973	329.219	284.286	–113.008	80.879	–705.602	–371.393	–213.238	6.188
	1900.00	58.295	332.362	286.734	–107.194	86.693	–738.682	–371.223	–204.457	5.621
	2000.00	58.595	335.360	289.091	–101.350	92.537	–772.069	–371.056	–195.684	5.111
	2100.00	58.876	338.226	291.363	–95.476	98.411	–805.750	–370.897	–186.919	4.649
	2200.00	59.141	340.971	293.556	–89.575	104.312	–839.710	–370.748	–178.162	4.230
	2300.00	59.392	343.605	295.675	–83.648	110.239	–873.940	–370.611	–169.411	3.847
	2400.00	59.631	346.138	297.725	–77.697	116.190	–908.428	–370.490	–160.666	3.497
	2500.00	59.860	348.577	299.711	–71.722	122.165	–943.165	–370.387	–151.925	3.174
	2600.00	60.080	350.929	301.636	–65.725	128.162	–978.141	–370.304	–143.189	2.877
	2700.00	60.291	353.200	303.504	–59.707	134.180	–1013.348	–370.244	–134.455	2.601
	2800.00	60.496	355.397	305.318	–53.667	140.220	–1048.778	–370.209	–125.722	2.345
	2900.00	60.694	357.523	307.082	–47.608	146.279	–1084.425	–370.202	–116.991	2.107
	3000.00	60.887	359.584	308.798	–41.529	152.358	–1120.281	–370.224	–108.259	1.885

References

Phase	H / S	C_p
GAS	Ja1	Ja1

74.093

CALCIUM HYDROXIDE

Ca(OH)2

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	87.487	83.387	83.387	−986.085	0.000	−1010.947	−986.085	−898.470	157.408
	300.00	87.781	83.929	83.389	−985.923	0.162	−1011.102	−986.077	−897.927	156.343
	400.00	98.408	110.840	86.986	−976.543	9.542	−1020.879	−985.149	−868.659	113.435
	500.00	103.763	133.431	94.080	−966.410	19.675	−1033.125	−983.690	−839.700	87.723
	600.00	107.444	152.695	102.283	−955.838	30.247	−1047.455	−982.065	−811.053	70.608
	700.00	110.708	169.505	110.711	−944.929	41.156	−1063.582	−980.415	−782.682	58.404

References

Phase	H / S	C_p	Remarks
SOL	Nb1,Ja1	Ja1,H2	Ja1 NDPT= 794.7

266.566

CALCIUM HAFNIUM TRIOXIDE

CaHfO3

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	146.846	113.386	113.386	−1811.701	0.000	−1845.507	−1811.701	−1728.424	302.813
	300.00	146.602	114.294	113.389	−1811.430	0.271	−1845.718	−1811.606	−1727.908	300.856
	400.00	138.500	155.164	119.017	−1797.242	14.459	−1859.308	−1807.062	−1700.723	222.092
	500.00	135.478	185.691	129.424	−1783.567	28.134	−1876.413	−1803.358	−1674.581	174.942
	600.00	134.456	210.281	140.915	−1770.082	41.619	−1896.250	−1800.236	−1649.127	143.569
	700.00	134.377	230.993	152.342	−1756.645	55.056	−1918.341	−1797.589	−1624.158	121.196
	800.00	134.802	248.960	163.321	−1743.190	68.511	−1942.358	−1796.099	−1599.447	104.433
	900.00	135.520	264.877	173.737	−1729.675	82.026	−1968.065	−1794.157	−1574.988	91.410
	1000.00	136.419	279.201	183.579	−1716.080	95.621	−1995.280	−1792.709	−1550.718	81.001
	1100.00	137.437	292.250	192.874	−1702.388	109.313	−2023.862	−1791.724	−1526.570	72.491
	1200.00	138.536	304.255	201.662	−1688.589	123.112	−2053.695	−1798.127	−1501.876	65.375
	1300.00	139.692	315.389	209.987	−1674.678	137.023	−2084.684	−1795.818	−1477.282	59.358
	1400.00	140.889	325.785	217.891	−1660.650	151.051	−2116.749	−1793.513	−1452.866	54.207
	1500.00	142.117	335.547	225.413	−1646.500	165.201	−2149.820	−1791.205	−1428.615	49.749
	1600.00	143.367	344.759	232.587	−1632.226	179.475	−2183.840	−1788.888	−1404.518	45.853
	1700.00	144.636	353.488	239.444	−1617.826	193.875	−2218.756	−1786.558	−1380.566	42.420
	1800.00	145.919	361.792	246.012	−1603.298	208.403	−2254.523	−1937.516	−1352.788	39.257
	1900.00	147.213	369.716	252.316	−1588.641	223.060	−2291.102	−1934.312	−1320.390	36.300
	2000.00	148.516	377.300	258.377	−1573.855	237.846	−2328.455	−1931.093	−1288.161	33.643

References

Phase	H / S	C_p
SOL	Nb1/Tk1	e

CaMgO2 CALCIUM MAGNESIUM DIOXIDE 96.382

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		J / (K mol)			kJ / mol					
SOL	298.15	79.583	66.316	66.316	−1243.903	0.000	−1263.675	−1243.903	−1180.418	206.804
	300.00	79.850	66.810	66.318	−1243.756	0.147	−1263.798	−1243.903	−1180.024	205.460
	400.00	89.483	91.283	69.589	−1235.226	8.677	−1271.739	−1243.469	−1158.778	151.321
	500.00	94.353	111.825	76.040	−1226.011	17.892	−1281.923	−1242.676	−1137.695	118.854
	600.00	97.349	129.311	83.498	−1216.416	27.487	−1294.002	−1241.885	−1116.774	97.224
	700.00	99.459	144.483	91.151	−1206.570	37.333	−1307.708	−1241.265	−1095.975	81.783
	800.00	101.097	157.875	98.671	−1196.539	47.364	−1322.839	−1241.635	−1075.156	70.200
	900.00	102.461	169.863	105.926	−1186.360	57.543	−1339.237	−1241.472	−1054.361	61.194
	1000.00	103.654	180.722	112.872	−1176.053	67.850	−1356.775	−1250.717	−1032.801	53.948
	1100.00	104.737	190.652	119.498	−1165.633	78.270	−1375.350	−1251.366	−1010.981	48.007
	1200.00	105.743	199.809	125.814	−1155.108	88.795	−1394.879	−1259.309	−988.470	43.027
	1300.00	106.696	208.311	131.836	−1144.486	99.417	−1415.290	−1258.462	−965.934	38.812
	1400.00	107.611	216.252	137.586	−1133.770	110.133	−1436.523	−1384.516	−939.837	35.066
	1500.00	108.496	223.707	143.081	−1122.965	120.938	−1458.525	−1382.359	−908.150	31.625
	1600.00	109.360	230.737	148.342	−1112.072	131.831	−1481.250	−1380.141	−876.608	28.618
	1700.00	110.207	237.392	153.386	−1101.093	142.810	−1504.659	−1377.861	−845.206	25.970
	1800.00	111.041	243.715	158.230	−1090.031	153.872	−1528.717	−1528.826	−809.977	23.505

References

Phase	H / S	C_p
SOL	Ku1	K7

156.466 MONTICELLITE **CaMgSiO4**

Phase	T [K]	C_p J/(K mol)	S J/(K mol)	−(G−H298)/T J/(K mol)	H kJ/mol	H−H298 kJ/mol	G kJ/mol	ΔH_f kJ/mol	ΔG_f kJ/mol	log K_f [−]
SOL	298.15	123.219	109.621	109.621	−2263.080	0.000	−2295.763	−2263.080	−2145.731	375.923
	300.00	123.733	110.385	109.623	−2262.852	0.228	−2295.967	−2263.090	−2145.003	373.478
	400.00	142.899	148.934	114.749	−2249.406	13.674	−2308.980	−2262.835	−2105.642	274.969
	500.00	153.490	182.051	124.982	−2234.545	28.535	−2325.571	−2261.733	−2066.461	215.882
	600.00	160.705	210.706	136.935	−2218.817	44.263	−2345.241	−2260.345	−2027.535	176.513
	700.00	166.326	235.916	149.311	−2202.457	60.623	−2367.597	−2258.914	−1988.846	148.410
	800.00	171.098	258.444	161.569	−2185.580	77.500	−2392.335	−2258.283	−1950.268	127.339
	900.00	175.376	278.847	173.484	−2168.253	94.827	−2419.216	−2256.939	−1911.850	110.961
	1000.00	179.347	297.532	184.967	−2150.515	112.565	−2448.047	−2264.825	−1872.809	97.825
	1100.00	183.118	314.804	195.995	−2132.390	130.690	−2478.675	−2263.934	−1833.651	87.073
	1200.00	186.752	330.894	206.574	−2113.896	149.184	−2510.969	−2270.156	−1793.952	78.089
	1300.00	190.290	345.983	216.723	−2095.043	168.037	−2544.820	−2267.403	−1754.378	70.492
	1400.00	193.759	360.212	226.469	−2075.840	187.240	−2580.137	−2391.366	−1711.397	63.853
	1500.00	197.176	373.697	235.839	−2056.293	206.787	−2616.838	−2386.934	−1662.981	57.910
	1600.00	200.553	386.530	244.859	−2036.406	226.674	−2654.855	−2382.254	−1614.869	52.720
	1700.00	203.900	398.789	253.556	−2016.183	246.897	−2694.125	−2427.506	−1566.610	48.136
	1763.00	205.997	406.247	258.880	−2003.272	259.808	−2719.485	−2577.755	−1534.039	45.451

References

Phase	H / S	C_p	Remarks	
SOL	Nb1/Tk1	S5	Tk1	DPT= 1763. (LIQ + SOLIDS)

CaMgSi2O6 DIOPSIDE 216.550

Phase	T [K]	C_p J / (K mol)	S J / (K mol)	−(G−H298)/T J / (K mol)	H kJ / mol	H−H298 kJ / mol	G kJ / mol	ΔH_f kJ / mol	ΔG_f kJ / mol	log K_f [−]
SOL	298.15	156.133	142.930	142.930	−3206.199	0.000	−3248.813	−3206.199	−3032.005	531.195
	300.00	157.086	143.898	142.933	−3205.909	0.290	−3249.079	−3206.239	−3030.924	527.731
	400.00	193.560	194.665	149.607	−3188.176	18.023	−3266.042	−3206.789	−2972.326	388.146
	500.00	214.560	240.286	163.272	−3167.692	38.507	−3287.835	−3205.403	−2913.844	304.407
	600.00	228.935	280.745	179.545	−3145.479	60.720	−3313.926	−3203.066	−2855.741	248.614
	700.00	239.720	316.881	196.630	−3122.023	84.176	−3343.840	−3200.243	−2798.072	208.795
	800.00	248.180	349.465	213.732	−3097.612	108.587	−3377.184	−3197.923	−2740.734	178.952
	900.00	254.921	379.101	230.485	−3072.444	133.755	−3413.635	−3194.705	−2683.780	155.763
	1000.00	260.262	406.247	246.723	−3046.674	159.525	−3452.922	−3200.630	−2626.417	137.190
	1100.00	264.382	431.255	262.377	−3020.432	185.767	−3494.813	−3197.786	−2569.135	121.998
	1200.00	267.392	454.396	277.426	−2993.835	212.364	−3539.111	−3202.153	−2511.485	109.322
	1300.00	269.360	475.884	291.876	−2966.989	239.210	−3585.638	−3197.732	−2454.109	98.607
	1400.00	270.330	495.887	305.742	−2939.996	266.203	−3634.238	−3320.303	−2393.444	89.300
	1500.00	270.333	514.543	319.047	−2912.955	293.244	−3684.770	−3314.842	−2327.431	81.048
	1600.00	269.392	531.965	331.816	−2885.961	320.238	−3737.105	−3309.588	−2261.776	73.839
	1665.00	268.280	542.672	339.841	−2868.485	337.714	−3772.034	−3306.326	−2219.275	69.623
			77.147		128.449					
LIQ	1665.00	355.556	619.819	339.841	−2740.036	466.163	−3772.034	−3177.877	−2219.275	69.623
	1700.00	355.556	627.215	345.681	−2727.591	478.608	−3793.857	−3273.468	−2198.280	67.545
	1800.00	355.556	647.538	361.892	−2692.035	514.164	−3857.605	−3412.811	−2131.473	61.854
	1900.00	355.556	666.762	377.436	−2656.480	549.719	−3923.328	−3398.078	−2060.690	56.652

References

Phase	H / S	C_p
SOL	Nb1	S5
LIQ	S5	S5

272.628 AKERMANITE **Ca2MgSi2O7**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	212.011	209.200	209.200	−3877.191	0.000	−3939.564	−3877.191	−3679.823	644.690
	300.00	212.762	210.514	209.204	−3876.798	0.393	−3939.952	−3877.202	−3678.599	640.501
	400.00	240.835	276.048	217.949	−3853.951	23.240	−3964.370	−3876.699	−3612.424	471.734
	500.00	256.366	331.591	235.272	−3829.031	48.160	−3994.827	−3875.098	−3546.528	370.503
	600.00	266.961	379.317	255.396	−3802.838	74.353	−4030.429	−3873.220	−3480.990	303.047
	700.00	275.224	421.111	276.146	−3775.715	101.476	−4070.493	−3871.423	−3415.763	254.887
	800.00	282.245	458.331	296.635	−3747.834	129.357	−4114.499	−3871.344	−3350.595	218.771
	900.00	288.544	491.943	316.498	−3719.290	157.901	−4162.039	−3869.923	−3285.593	190.691
	1000.00	294.395	522.650	335.600	−3690.140	187.051	−4212.791	−3878.083	−3219.958	168.193
	1100.00	299.952	550.972	353.908	−3660.421	216.770	−4266.490	−3877.813	−3154.163	149.779
	1200.00	305.310	577.302	371.440	−3630.157	247.034	−4322.919	−3891.943	−3087.137	134.380
	1300.00	310.527	601.947	388.233	−3599.364	277.827	−4381.894	−3888.296	−3020.216	121.354
	1400.00	315.642	625.147	404.335	−3568.055	309.136	−4443.260	−4011.285	−2949.959	110.064
	1500.00	320.682	647.096	419.794	−3536.238	340.953	−4506.882	−4005.798	−2874.340	100.093
	1600.00	325.664	667.952	434.657	−3503.920	373.271	−4572.643	−3999.983	−2799.097	91.381
	1700.00	330.602	687.843	448.970	−3471.106	406.085	−4640.440	−4094.194	−2723.334	83.678
	1727.00	331.929	693.063	452.746	−3462.162	415.029	−4659.083	−4092.364	−2701.576	81.712

References

Phase	H / S	C_p	Remarks	
SOL	S5,Nb1	S5	S5	MPT= 1727.

$Ca_3MgSi_2O_8$ MERWINITE 328.705

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	252.256	253.098	253.098	−4567.702	0.000	−4643.163	−4567.702	−4340.491	760.436
	300.00	253.182	254.662	253.103	−4567.234	0.468	−4643.633	−4567.713	−4339.081	755.501
	400.00	287.508	332.802	263.524	−4539.991	27.711	−4673.112	−4566.872	−4262.933	556.682
	500.00	306.101	399.124	284.190	−4510.235	57.467	−4709.797	−4564.658	−4187.191	437.433
	600.00	318.503	456.090	308.205	−4478.971	88.731	−4752.625	−4562.147	−4111.933	357.976
	700.00	327.981	505.925	332.965	−4446.630	121.072	−4800.778	−4559.826	−4037.086	301.251
	800.00	335.900	550.251	357.406	−4413.426	154.276	−4853.627	−4560.134	−3962.270	258.710
	900.00	342.913	590.226	381.090	−4379.480	188.222	−4910.683	−4558.485	−3887.646	225.633
	1000.00	349.364	626.693	403.853	−4344.862	222.840	−4971.555	−4566.792	−3812.395	199.139
	1100.00	355.447	660.279	425.658	−4309.619	258.083	−5035.926	−4567.050	−3736.950	177.453
	1200.00	361.280	691.458	446.524	−4273.781	293.921	−5103.531	−4589.036	−3659.594	159.298
	1300.00	366.937	720.600	466.498	−4237.369	330.333	−5174.150	−4584.490	−3582.322	143.939
	1400.00	372.465	747.996	485.636	−4200.398	367.304	−5247.593	−4706.553	−3501.785	130.653
	1500.00	377.899	773.880	503.998	−4162.879	404.823	−5323.699	−4700.113	−3415.953	118.954
	1600.00	383.261	798.440	521.639	−4124.821	442.881	−5402.325	−4693.319	−3330.562	108.732
	1700.00	388.567	821.835	538.615	−4086.229	481.473	−5483.348	−4786.527	−3244.713	99.698
	1800.00	393.830	844.194	554.975	−4047.109	520.593	−5566.657	−5238.486	−3142.354	91.189
	1848.00	396.343	854.591	562.623	−4028.145	539.557	−5607.429	−5233.302	−3086.525	87.242

References

Phase	H / S	C_p	Remarks
SOL	S5,Nb1	S5	S5 DPT= 1848. (LIQ + SOLIDS), L= 123.4 kJ

$Ca_2Mg_5Si_8O_{23}{*}H_2O$ TREMOLITE 812.366

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	655.622	548.899	548.899	−12360.000	0.000	−12523.654	−12360.000	−11632.416	2037.951
	300.00	658.450	552.963	548.912	−12358.784	1.216	−12524.673	−12360.110	−11627.901	2024.597
	400.00	767.325	758.983	576.262	−12286.912	73.088	−12590.505	−12361.681	−11383.388	1486.518
	500.00	832.281	937.655	631.097	−12206.721	153.279	−12675.548	−12358.082	−11139.160	1163.700
	600.00	879.951	1093.782	695.475	−12121.016	238.984	−12777.285	−12351.883	−10895.925	948.575
	700.00	919.459	1232.467	762.464	−12030.998	329.002	−12893.725	−12344.104	−10653.863	795.001
	800.00	954.616	1357.575	829.159	−11937.267	422.733	−13023.327	−12336.631	−10412.815	679.887
	900.00	987.244	1471.915	894.313	−11840.158	519.842	−13164.882	−12326.493	−10172.939	590.422
	1000.00	1018.302	1577.550	957.420	−11739.870	620.130	−13317.420	−12360.426	−9930.440	518.713
	1100.00	1048.333	1676.020	1018.321	−11636.532	723.468	−13480.153	−12348.390	−9688.013	460.045

References

Phase	H / S	C_p
SOL	Nb1	S5

116.162 WOLLASTONITE **CaSiO3**

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	85.265	81.919	81.919	−1634.940	0.000	−1659.364	−1634.940	−1549.656	271.493
	300.00	85.670	82.447	81.920	−1634.782	0.158	−1659.516	−1634.947	−1549.127	269.727
	400.00	100.437	109.388	85.493	−1625.382	9.558	−1669.137	−1634.701	−1520.528	198.561
	500.00	108.081	132.698	92.661	−1614.922	20.018	−1681.271	−1633.801	−1492.082	155.877
	600.00	112.922	152.859	101.053	−1603.857	31.083	−1695.572	−1632.710	−1463.840	127.439
	700.00	116.438	170.542	109.743	−1592.381	42.559	−1711.760	−1631.631	−1435.781	107.139
	800.00	119.249	186.279	118.344	−1580.592	54.348	−1729.615	−1631.398	−1407.779	91.919
	900.00	121.650	200.466	126.694	−1568.545	66.395	−1748.964	−1630.491	−1379.884	80.086
	1000.00	123.796	213.396	134.727	−1556.271	78.669	−1769.667	−1629.903	−1352.073	70.625
	1100.00	125.776	225.289	142.426	−1543.791	91.149	−1791.609	−1629.639	−1324.306	62.886
	1200.00	127.642	236.314	149.797	−1531.119	103.821	−1814.696	−1636.646	−1295.932	56.410
	1300.00	129.429	246.602	156.852	−1518.265	116.675	−1838.847	−1634.837	−1267.611	50.933
	1398.00	131.123	256.070	163.478	−1505.498	129.442	−1863.483	−1632.979	−1239.996	46.331

References

Phase	H / S	C_p	Remarks
SOL−A	Nb1	S5	Tk1 TPT= 1398. (WOL. − PSEUDOWOL.), L= 5.4 kJ

CaSiO3[B] PSEUDOWOLLASTONITE 116.162

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−B	298.15	86.478	87.362	87.362	−1628.400	0.000	−1654.447	−1628.400	−1544.739	270.632
	300.00	86.836	87.898	87.364	−1628.240	0.160	−1654.609	−1628.405	−1544.220	268.873
	400.00	99.976	114.915	90.958	−1618.817	9.583	−1664.783	−1628.136	−1516.174	197.992
	500.00	106.943	138.039	98.122	−1608.442	19.958	−1677.461	−1627.321	−1488.272	155.479
	600.00	111.481	157.962	106.474	−1597.507	30.893	−1692.284	−1626.361	−1460.552	127.152
	700.00	114.871	175.412	115.102	−1586.183	42.217	−1708.971	−1625.433	−1432.992	106.931
	800.00	117.651	190.937	123.628	−1574.553	53.847	−1727.303	−1625.359	−1405.466	91.768
	900.00	120.074	204.937	131.898	−1562.665	65.735	−1747.108	−1624.611	−1378.027	79.979
	1000.00	122.277	217.704	139.849	−1550.545	77.855	−1768.249	−1624.178	−1350.655	70.551
	1100.00	124.336	229.455	147.468	−1538.214	90.186	−1790.615	−1624.062	−1323.311	62.839
	1200.00	126.297	240.359	154.760	−1525.681	102.719	−1814.112	−1631.208	−1295.348	56.385
	1300.00	128.188	250.543	161.740	−1512.957	115.443	−1838.663	−1629.529	−1267.427	50.926
	1400.00	130.029	260.110	168.429	−1500.046	128.354	−1864.200	−1627.750	−1239.639	46.251
	1500.00	131.833	269.143	174.845	−1486.952	141.448	−1890.667	−1625.872	−1211.981	42.205
	1600.00	133.609	277.708	181.008	−1473.680	154.720	−1918.013	−1623.895	−1184.453	38.668
	1700.00	135.363	285.861	186.938	−1460.231	168.169	−1946.195	−1671.996	−1156.604	35.538
	1800.00	137.100	293.647	192.652	−1446.608	181.792	−1975.173	−1822.899	−1122.391	32.571
	1817.00	137.394	294.937	193.603	−1444.275	184.125	−1980.176	−1822.334	−1115.778	32.076
			30.856		56.066					
LIQ	1817.00	146.440	325.794	193.603	−1388.209	240.191	−1980.176	−1766.268	−1115.778	32.076
	1900.00	146.440	332.335	199.521	−1376.054	252.346	−2007.490	−1762.761	−1086.143	29.860
	2000.00	146.440	339.846	206.351	−1361.410	266.990	−2041.103	−1758.572	−1050.640	27.440
	2100.00	146.440	346.991	212.880	−1346.766	281.634	−2075.447	−1754.425	−1015.346	25.255
	2200.00	146.440	353.803	219.132	−1332.122	296.278	−2110.490	−1750.321	−980.248	23.274

References

Phase	H / S	C_p
SOL−B	Nb1	S5,e
LIQ	Tk1	S5

172.239 OLIVINE **Ca2SiO4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−C	298.15	126.652	120.792	120.792	−2315.216	0.000	−2351.230	−2315.216	−2198.590	385.184
	300.00	127.016	121.577	120.795	−2314.981	0.235	−2351.454	−2315.221	−2197.867	382.683
	400.00	141.607	160.310	125.977	−2301.483	13.733	−2365.607	−2314.936	−2158.766	281.906
	500.00	151.130	192.986	136.197	−2286.822	28.394	−2383.314	−2314.057	−2119.818	221.456
	600.00	158.658	221.225	148.067	−2271.321	43.895	−2404.056	−2312.969	−2081.071	181.173
	700.00	165.243	246.185	160.335	−2255.121	60.095	−2427.451	−2311.860	−2042.510	152.414
	800.00	171.326	268.652	172.493	−2238.289	76.927	−2453.211	−2312.294	−2003.920	130.843
	900.00	177.118	289.168	184.333	−2220.865	94.351	−2481.116	−2311.184	−1965.445	114.071
	1000.00	182.728	308.120	195.776	−2202.872	112.344	−2510.992	−2310.491	−1927.070	100.660
	1100.00	188.219	325.795	206.801	−2184.324	130.892	−2542.698	−2310.210	−1888.745	89.689
	1121.00	189.361	329.365	209.064	−2180.359	134.857	−2549.577	−2326.977	−1880.562	87.628
			12.477		13.987					
SOL-A1	1121.00	184.043	341.842	209.064	−2166.372	148.844	−2549.577	−2312.990	−1880.562	87.628
	1200.00	188.090	354.512	218.226	−2151.673	163.543	−2577.087	−2310.668	−1850.166	80.536
	1300.00	193.213	369.769	229.301	−2132.608	182.608	−2613.307	−2307.368	−1811.922	72.804
	1400.00	198.335	384.275	239.857	−2113.030	202.186	−2651.015	−2303.659	−1773.947	66.187
	1500.00	203.457	398.134	249.950	−2092.941	222.275	−2690.141	−2299.534	−1736.252	60.462
	1600.00	208.580	411.428	259.630	−2072.339	242.877	−2730.623	−2294.989	−1698.846	55.462
	1700.00	213.702	424.227	268.938	−2051.225	263.991	−2772.410	−2340.200	−1661.290	51.045
	1712.00	214.317	425.732	270.031	−2048.657	266.559	−2777.510	−2339.551	−1656.500	50.541
			8.287		14.188					
SOL−A	1712.00	205.016	434.019	270.031	−2034.469	280.747	−2777.510	−2325.363	−1656.500	50.541
	1800.00	205.016	444.296	278.302	−2016.427	298.789	−2816.159	−2628.019	−1614.292	46.846
	1900.00	205.016	455.380	287.333	−1995.925	319.291	−2861.148	−2621.890	−1558.141	42.836
	2000.00	205.016	465.896	296.000	−1975.424	339.792	−2907.217	−2615.817	−1502.311	39.236
	2100.00	205.016	475.899	304.331	−1954.922	360.294	−2954.310	−2609.804	−1446.784	35.987
	2200.00	205.016	485.436	312.348	−1934.421	380.795	−3002.381	−2603.855	−1391.542	33.039
	2300.00	205.016	494.550	320.073	−1913.919	401.297	−3051.384	−2597.973	−1336.569	30.354
	2400.00	205.016	503.275	327.526	−1893.417	421.799	−3101.278	−2592.163	−1281.850	27.899
	2403.00	205.016	503.531	327.745	−1892.802	422.414	−3102.788	−2591.990	−1280.212	27.828
			29.600		71.128					
LIQ	2403.00	209.200	533.131	327.745	−1821.674	493.542	−3102.788	−2520.862	−1280.212	27.828
	2500.00	209.200	541.410	335.876	−1801.382	513.834	−3154.906	−2514.894	−1230.251	25.705
	2600.00	209.200	549.615	343.940	−1780.462	534.754	−3209.460	−2508.821	−1178.986	23.686
	2700.00	209.200	557.510	351.705	−1759.542	555.674	−3264.819	−2502.831	−1127.952	21.822
	2800.00	209.200	565.118	359.192	−1738.622	576.594	−3320.952	−2496.928	−1077.139	20.094

References

Phase	H / S	C_p
SOL−C	Nb1	S5,e
SOL−A1	Pa3	Pa3
SOL−A	Pa3	S5
LIQ	e	e

Ca_2SiO_4[B] LARNITE 172.239

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−B	298.15	128.779	127.742	127.742	−2304.823	0.000	−2342.909	−2304.823	−2190.269	383.726
	300.00	129.216	128.540	127.744	−2304.584	0.239	−2343.146	−2304.824	−2189.558	381.236
	400.00	146.024	168.277	133.048	−2290.731	14.092	−2358.042	−2304.184	−2151.202	280.918
	500.00	155.992	202.005	143.555	−2275.598	29.225	−2376.601	−2302.834	−2113.105	220.755
	600.00	163.269	231.116	155.778	−2259.620	45.203	−2398.290	−2301.268	−2075.305	180.671
	700.00	169.274	256.746	168.407	−2242.986	61.837	−2422.708	−2299.725	−2037.767	152.060
	800.00	174.602	279.703	180.909	−2225.788	79.035	−2449.550	−2299.792	−2000.260	130.604
	900.00	179.536	300.556	193.062	−2208.078	96.745	−2478.579	−2298.397	−1962.907	113.924
	970.00	182.839	314.126	201.313	−2195.395	109.428	−2500.097	−2297.722	−1936.841	104.299

References

Phase	H / S	C_p	Remarks
SOL−B	Nb1	S5,e	S5 TPT(B−C)= 970., L= 1.84 kJ

Ca_3SiO_5 TRICALCIUM SILICATE 228.317

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	171.878	168.599	168.599	−2929.202	0.000	−2979.470	−2929.202	−2783.898	487.727
	300.00	172.532	169.664	168.602	−2928.883	0.319	−2979.783	−2929.197	−2782.996	484.563
	400.00	196.783	223.045	175.715	−2910.270	18.932	−2999.488	−2927.857	−2734.416	357.078
	500.00	209.945	268.488	189.846	−2889.881	39.321	−3024.125	−2925.473	−2686.321	280.638
	600.00	218.742	307.586	206.288	−2868.423	60.779	−3052.975	−2922.865	−2638.736	229.722
	700.00	225.478	341.830	223.255	−2846.200	83.002	−3085.481	−2920.427	−2591.578	193.386
	800.00	231.116	372.315	240.017	−2823.363	105.839	−3121.216	−2920.566	−2544.472	166.137
	900.00	236.115	399.830	256.270	−2799.998	129.204	−3159.845	−2918.688	−2497.583	144.956
	1000.00	240.718	424.949	271.900	−2776.153	153.049	−3201.102	−2917.760	−2450.852	128.019
	1100.00	245.062	448.097	286.879	−2751.863	177.339	−3244.769	−2917.788	−2404.168	114.164
	1200.00	249.229	469.600	301.221	−2727.147	202.055	−3290.667	−2939.610	−2355.590	102.536
	1300.00	253.272	489.709	314.954	−2702.021	227.181	−3338.643	−2934.970	−2307.108	92.701
	1400.00	257.225	508.624	328.119	−2676.495	252.707	−3388.569	−2930.048	−2258.994	84.284
	1500.00	261.110	526.503	340.754	−2650.578	278.624	−3440.333	−2924.845	−2211.241	77.002
	1600.00	264.946	543.478	352.898	−2624.275	304.927	−3493.839	−2919.362	−2163.845	70.642
	1700.00	268.742	559.654	364.588	−2597.590	331.612	−3549.002	−2963.776	−2116.353	65.028
	1800.00	272.507	575.121	375.858	−2570.528	358.674	−3605.746	−3417.421	−2054.792	59.629

References

Phase	H / S	C_p	Remarks
SOL	Nb1	S5,e	Tk1 DPT= 2343. (LIQ + CaO)

288.401

TRICALCIUM DISILICATE (RANKINITE) Ca3Si2O7

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	214.386	210.790	210.790	−3961.001	0.000	−4023.848	−3961.001	−3761.500	658.999
	300.00	215.231	212.119	210.794	−3960.604	0.397	−4024.239	−3961.008	−3760.262	654.720
	400.00	246.887	278.910	219.686	−3937.311	23.690	−4048.875	−3960.083	−3693.426	482.312
	500.00	264.538	336.047	237.391	−3911.673	49.328	−4079.697	−3957.788	−3627.012	378.911
	600.00	276.675	385.405	258.041	−3884.583	76.418	−4115.826	−3955.084	−3561.108	310.022
	700.00	286.209	428.794	279.397	−3856.423	104.578	−4156.579	−3952.413	−3495.659	260.849
	800.00	294.356	467.555	300.537	−3827.386	133.615	−4201.431	−3952.197	−3430.304	223.976
	900.00	301.697	502.655	321.075	−3797.579	163.422	−4249.968	−3949.844	−3365.217	195.312
	1000.00	308.537	534.800	340.862	−3767.064	193.937	−4301.863	−3948.316	−3300.348	172.392
	1100.00	315.049	564.514	359.860	−3735.882	225.119	−4356.848	−3947.617	−3235.592	153.645
	1200.00	321.338	592.198	378.081	−3704.061	256.940	−4414.699	−3968.583	−3169.014	137.944
	1300.00	327.471	618.162	395.561	−3671.620	289.381	−4475.230	−3962.952	−3102.609	124.664
	1400.00	333.490	642.651	412.343	−3638.571	322.430	−4538.282	−3956.904	−3036.653	113.299
	1500.00	339.424	665.862	428.478	−3604.925	356.076	−4603.717	−3950.438	−2971.143	103.464
	1600.00	345.294	687.955	444.010	−3570.688	390.313	−4671.417	−3943.554	−2906.079	94.874
	1700.00	351.115	709.064	458.985	−3535.867	425.134	−4741.276	−4036.608	−2840.565	87.280
	1737.00	353.258	716.647	464.393	−3522.837	438.164	−4767.652	−4033.643	−2814.565	84.639

References

Phase	H / S	C_p	Remarks
SOL	Nb1	S5,e	Tk1

DPT= 1737. (LIQ + Ca2SiO4)

212.277

CALCIUM 2−SILICATE 2−HYDRATE CaSi2O5*2H2O

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	162.098	171.126	171.126	−3138.000	0.000	−3189.021	−3138.000	−2873.449	503.416
	300.00	162.841	172.131	171.129	−3137.699	0.301	−3189.339	−3138.117	−2871.807	500.026
	400.00	191.716	223.365	177.918	−3119.821	18.179	−3209.167	−3143.269	−2782.204	363.319
	500.00	209.284	268.154	191.588	−3099.717	38.283	−3233.794	−3146.967	−2691.488	281.178
	600.00	222.401	307.514	207.695	−3078.109	59.891	−3262.617	−3149.887	−2600.109	226.360
	700.00	233.416	342.643	224.509	−3055.306	82.694	−3295.156	−3152.315	−2508.281	187.170
	800.00	243.311	374.467	241.295	−3031.462	106.538	−3331.036	−3155.115	−2416.040	157.751
	900.00	252.556	403.664	257.736	−3006.665	131.335	−3369.962	−3156.779	−2323.554	134.856
	1000.00	261.395	430.733	273.698	−2980.965	157.035	−3411.698	−3158.306	−2230.891	116.530

References

Phase	H / S	C_p
SOL	M1,e	M1

$Ca_2Si_3O_8 \cdot 2.5H_2O$ 2–CALCIUM 3–SILICATE 5/2–HYDRATE 337.446

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	295.182	271.542	271.542	–4920.384	0.000	–5001.344	–4920.384	–4541.292	795.615
	300.00	296.478	273.372	271.547	–4919.837	0.547	–5001.848	–4920.460	–4538.939	790.300
	400.00	347.361	366.367	283.882	–4887.390	32.994	–5033.937	–4922.392	–4411.370	576.066
	500.00	379.070	447.490	308.675	–4850.976	69.408	–5074.721	–4921.568	–4283.668	447.512
	600.00	403.233	518.813	337.874	–4811.820	108.564	–5123.108	–4919.168	–4156.293	361.837
	700.00	423.832	582.551	368.354	–4770.446	149.938	–5178.232	–4915.705	–4029.408	300.678
	800.00	442.533	640.382	398.798	–4727.116	193.268	–5239.422	–4912.885	–3902.895	254.833
	900.00	460.128	693.529	428.632	–4681.976	238.408	–5306.152	–4907.685	–3776.955	219.209
	1000.00	477.039	742.888	457.618	–4635.113	285.271	–5378.002	–4902.103	–3651.614	190.741

References

Phase	H / S	C_p
SOL	M1,e	M1

$Ca_2SiO_4 \cdot 7/6H_2O$ CALCIUM ORTHOSILICATE 7/6–HYDRATE 193.137

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	164.824	160.666	160.666	–2665.208	0.000	–2713.110	–2665.208	–2479.799	434.450
	300.00	165.426	161.687	160.669	–2664.903	0.305	–2713.409	–2665.235	–2478.648	431.571
	400.00	189.849	212.932	167.490	–2647.031	18.177	–2732.204	–2665.672	–2416.337	315.541
	500.00	206.188	257.137	181.103	–2627.191	38.017	–2755.759	–2664.779	–2354.087	245.930
	600.00	219.344	295.924	197.072	–2605.897	59.311	–2783.451	–2663.127	–2292.094	199.544
	700.00	230.998	330.625	213.715	–2583.371	81.837	–2814.808	–2660.988	–2230.418	166.436
	800.00	241.851	362.185	230.330	–2559.724	105.484	–2849.472	–2659.967	–2168.892	141.614
	900.00	252.238	391.275	246.617	–2535.016	130.192	–2887.163	–2656.999	–2107.686	122.327

References

Phase	H / S	C_p
SOL	M1,e	M1

342.447 TRICALCIUM DISILICATE TRIHYDRATE **Ca3Si2O7*3H2O**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	328.376	312.126	312.126	−4782.312	0.000	−4875.372	−4782.312	−4404.391	771.631
	300.00	329.574	314.161	312.133	−4781.703	0.609	−4875.952	−4782.350	−4402.046	766.464
	400.00	378.281	416.259	325.723	−4746.098	36.214	−4912.601	−4782.285	−4275.186	558.282
	500.00	410.961	504.352	352.846	−4706.559	75.753	−4958.735	−4779.446	−4148.697	433.411
	600.00	437.333	581.673	384.669	−4664.110	118.202	−5013.114	−4774.910	−4022.950	350.229
	700.00	460.726	650.871	417.839	−4619.190	163.122	−5074.800	−4769.173	−3898.062	290.877
	800.00	482.532	713.829	450.960	−4572.017	210.295	−5143.080	−4764.686	−3773.790	246.403
	900.00	503.414	771.876	483.433	−4522.714	259.598	−5217.402	−4756.869	−3650.394	211.863

References

Phase	H / S	C_p
SOL	M1,e	M1

431.585 4−CALCIUM 3−SILICATE 3/2−HYDRATE **Ca4Si3O10*1.5H2O**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	353.810	330.327	330.327	−6020.776	0.000	−6119.263	−6020.776	−5642.891	988.611
	300.00	354.896	332.519	330.334	−6020.120	0.656	−6119.876	−6020.811	−5640.546	982.106
	400.00	398.840	441.199	344.854	−5982.238	38.538	−6158.717	−6021.036	−5513.677	720.012
	500.00	428.057	533.494	373.587	−5940.822	79.954	−6207.569	−6019.203	−5387.019	562.778
	600.00	451.477	613.665	407.063	−5896.814	123.962	−6265.014	−6016.318	−5260.841	457.997
	700.00	472.160	684.839	441.754	−5850.617	170.159	−6330.004	−6012.854	−5135.196	383.193
	800.00	491.385	749.154	476.222	−5802.430	218.346	−6401.753	−6011.976	−5009.708	327.100
	900.00	509.761	808.098	509.867	−5752.368	268.408	−6479.656	−6007.524	−4884.695	283.500
	1000.00	527.611	862.734	542.454	−5700.496	320.280	−6563.230	−6003.428	−4760.160	248.645

References

Phase	H / S	C_p
SOL	M1,e	M1

$Ca_5Si_6O_{17}*3H_2O$ 5–CALCIUM 6–SILICATE 3–HYDRATE 694.939

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	595.804	513.168	513.168	–9928.632	0.000	–10081.633	–9928.632	–9257.685	1621.908
	300.00	597.587	516.859	513.179	–9927.528	1.104	–10082.586	–9928.688	–9253.521	1611.181
	400.00	671.187	699.726	537.613	–9863.787	64.845	–10143.677	–9928.982	–9028.290	1178.974
	500.00	722.041	855.203	585.973	–9794.017	134.615	–10221.618	–9925.708	–8803.441	919.689
	600.00	763.943	990.639	642.368	–9719.669	208.963	–10314.053	–9920.294	–8579.467	746.909
	700.00	801.617	1111.269	700.889	–9641.366	287.266	–10419.255	–9913.376	–8356.524	623.571
	800.00	837.038	1220.641	759.125	–9559.420	369.212	–10535.932	–9908.916	–8134.201	531.109
	900.00	871.149	1321.209	816.064	–9474.002	454.630	–10663.090	–9899.199	–7912.942	459.255

References

Phase	H / S	C_p
SOL	M1,e	M1

$Ca_5Si_6O_{17}*5.5H_2O$ 5–CALCIUM 6–SILICATE 5.5–HYDRATE 739.977

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	698.645	611.492	611.492	–10686.773	0.000	–10869.089	–10686.773	–9871.280	1729.407
	300.00	700.109	615.818	611.505	–10685.479	1.294	–10870.224	–10686.841	–9866.219	1717.861
	400.00	779.228	828.062	639.910	–10611.512	75.261	–10942.737	–10687.888	–9592.378	1252.636
	500.00	858.348	1010.441	696.162	–10529.634	157.139	–11034.854	–10683.636	–9318.882	973.537
	600.00	937.467	1173.930	762.380	–10439.843	246.930	–11144.201	–10674.050	–9046.743	787.589
	700.00	1016.586	1324.383	832.050	–10342.140	344.633	–11269.208	–10659.145	–8776.630	654.920

References

Phase	H / S	C_p
SOL	M1,e	M1

830.053 **5–CALCIUM 6–SILICATE 10.5–HYDRATE** **Ca5Si6O17*10.5w**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	889.939	808.140	808.140	−12179.624	0.000	−12420.571	−12179.624	−11075.039	1940.301
	300.00	892.029	813.651	808.157	−12177.976	1.648	−12422.071	−12179.740	−11068.184	1927.142
	400.00	1004.997	1085.743	844.494	−12083.124	96.500	−12517.422	−12181.860	−10697.119	1396.900
	500.00	1117.965	1322.137	916.842	−11976.976	202.648	−12638.045	−12175.599	−10326.484	1078.800
	600.00	1230.933	1535.952	1002.464	−11859.531	320.093	−12781.103	−12160.903	−9957.901	866.912
	700.00	1343.901	1734.184	1092.993	−11730.790	448.834	−12944.719	−12137.785	−9592.445	715.797

References

Phase	H / S	C_p
SOL	M1,e	M1

714.985 **6–CALCIUM 6–SILICATE HYDRATE** **Ca6Si6O18*H2O**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	548.299	507.519	507.519	−10024.864	0.000	−10176.181	−10024.864	−9448.390	1655.319
	300.00	549.866	510.916	507.530	−10023.848	1.016	−10177.123	−10024.921	−9444.812	1644.488
	400.00	614.467	678.719	529.971	−9965.365	59.499	−10236.852	−10025.750	−9251.211	1208.084
	500.00	659.022	820.834	574.295	−9901.595	123.269	−10312.011	−10023.795	−9057.762	946.258
	600.00	695.685	944.306	625.894	−9833.816	191.048	−10400.400	−10020.370	−8864.859	771.755
	700.00	728.623	1054.054	679.361	−9762.579	262.285	−10500.417	−10016.081	−8672.603	647.158
	800.00	759.575	1153.385	732.501	−9688.157	336.707	−10610.865	−10015.613	−8480.456	553.717
	900.00	789.373	1244.579	784.399	−9610.702	414.162	−10730.824	−10009.678	−8288.922	481.077

References

Phase	H / S	C_p
SOL	M1,e	M1

CaTiO3 CALCIUM TITANIUM TRIOXIDE (PEROVSKITE) 135.956

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[–]
SOL–A	298.15	97.649	93.638	93.638	–1660.596	0.000	–1688.514	–1660.596	–1575.247	275.977
	300.00	98.046	94.243	93.640	–1660.415	0.181	–1688.688	–1660.590	–1574.717	274.183
	400.00	112.222	124.671	97.692	–1649.804	10.792	–1699.673	–1659.599	–1546.213	201.915
	500.00	119.089	150.529	105.744	–1638.204	22.392	–1713.468	–1657.981	–1518.047	158.589
	600.00	123.079	172.622	115.095	–1626.080	34.516	–1729.653	–1656.239	–1490.225	129.736
	700.00	125.711	191.805	124.714	–1613.632	46.964	–1747.896	–1654.612	–1462.687	109.147
	800.00	127.619	208.722	134.179	–1600.961	59.635	–1767.939	–1653.960	–1435.276	93.714
	900.00	129.106	223.842	143.316	–1588.122	72.474	–1789.580	–1652.780	–1408.016	81.719
	1000.00	130.332	237.510	152.063	–1575.149	85.447	–1812.659	–1652.078	–1380.862	72.129
	1100.00	131.386	249.983	160.406	–1562.062	98.534	–1837.043	–1651.857	–1353.755	64.284
	1200.00	132.325	261.456	168.355	–1548.875	111.721	–1862.622	–1663.061	–1325.912	57.715
	1300.00	133.181	272.082	175.931	–1535.600	124.996	–1889.306	–1661.075	–1297.897	52.150
	1400.00	133.979	281.981	183.156	–1522.241	138.355	–1917.014	–1659.114	–1270.034	47.386
	1500.00	134.732	291.250	190.057	–1508.805	151.791	–1945.681	–1657.187	–1242.310	43.261
	1530.00	134.951	293.921	192.067	–1504.760	155.836	–1954.459	–1656.616	–1234.018	42.130
			1.504		2.301					
SOL–B	1530.00	134.014	295.425	192.067	–1502.459	158.137	–1954.459	–1654.315	–1234.018	42.130
	1600.00	134.014	301.420	196.721	–1493.078	167.518	–1975.350	–1653.083	–1214.817	39.660
	1700.00	134.014	309.544	203.121	–1479.677	180.919	–2005.902	–1651.426	–1187.476	36.487
	1800.00	134.014	317.204	209.248	–1466.275	194.321	–2037.243	–1803.199	–1156.266	33.554
	1900.00	134.014	324.450	215.123	–1452.874	207.722	–2069.329	–1800.956	–1120.387	30.802
	2000.00	134.014	331.324	220.762	–1439.473	221.123	–2102.121	–1812.982	–1084.178	28.316
	2100.00	134.014	337.863	226.184	–1426.071	234.525	–2135.583	–1810.915	–1047.789	26.062
	2200.00	134.014	344.097	231.403	–1412.670	247.926	–2169.683	–1808.890	–1011.497	24.016
	2233.00	134.014	346.092	233.083	–1408.247	252.349	–2181.071	–1808.232	–999.541	23.381

References

Phase	H / S	C_p	Remarks	
SOL–A	Nb1	Ku1,e		
SOL–B	Tk1	Ku1	Tk1	MPT= 2233.

327.990 3–CALCIUM 2–TITANIUM 7–OXIDE **Ca3Ti2O7**

Phase	T	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	239.315	234.701	234.702	–3950.499	0.000	–4020.475	–3950.499	–3751.008	657.161
	300.00	240.136	236.184	234.706	–3950.056	0.443	–4020.911	–3950.479	–3749.770	652.893
	400.00	269.550	309.869	244.553	–3924.372	26.127	–4048.320	–3948.096	–3683.169	480.973
	500.00	284.018	371.731	263.978	–3896.622	53.877	–4082.488	–3944.532	–3617.339	377.901
	600.00	292.604	424.331	286.432	–3867.760	82.739	–4122.358	–3940.872	–3552.248	309.251
	700.00	298.412	469.897	309.460	–3838.193	112.306	–4167.121	–3937.641	–3487.741	260.258
	800.00	302.740	510.039	332.073	–3808.126	142.373	–4216.157	–3937.320	–3423.378	223.524
	900.00	306.207	545.904	353.875	–3777.673	172.826	–4268.986	–3935.361	–3359.266	194.967
	1000.00	309.139	578.321	374.724	–3746.902	203.597	–4325.223	–3934.747	–3295.301	172.129
	1100.00	311.722	607.909	394.598	–3715.857	234.642	–4384.556	–3935.485	–3231.332	153.443
	1200.00	314.068	635.134	413.523	–3684.566	265.933	–4446.727	–3966.405	–3165.149	137.775
	1300.00	316.246	660.360	431.552	–3653.049	297.450	–4511.517	–3962.188	–3098.549	124.501
	1400.00	318.302	683.872	448.745	–3621.321	329.178	–4578.742	–3957.991	–3032.273	113.136
	1500.00	320.268	705.900	465.162	–3589.391	361.108	–4648.242	–3953.828	–2966.296	103.296
	1600.00	322.166	726.631	480.862	–3557.269	393.230	–4719.878	–3949.715	–2900.595	94.695
	1700.00	324.012	746.218	495.900	–3524.960	425.539	–4793.530	–3945.669	–2835.149	87.114
	1800.00	325.816	764.789	510.327	–3492.468	458.031	–4869.088	–4401.617	–2758.048	80.036

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	Nb1,e	Tk1	DPT= 2013. (LIQ + CaTiO3)

$Ca_4Ti_3O_{10}$ 4–CALCIUM 3–TITANIUM 10–OXIDE 463.946

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	337.809	328.444	328.444	–5671.663	0.000	–5769.589	–5671.663	–5386.854	943.754
	300.00	338.989	330.537	328.450	–5671.037	0.626	–5770.198	–5671.635	–5385.087	937.627
	400.00	381.195	434.664	342.361	–5634.742	36.921	–5808.607	–5668.260	–5289.996	690.803
	500.00	401.890	522.178	369.821	–5595.485	76.178	–5856.574	–5663.171	–5196.004	542.823
	600.00	414.118	596.616	401.575	–5554.638	117.025	–5912.608	–5657.910	–5103.069	444.262
	700.00	422.348	661.106	434.147	–5512.792	158.871	–5975.566	–5653.220	–5010.978	373.924
	800.00	428.448	717.919	466.139	–5470.239	201.424	–6044.574	–5652.432	–4919.131	321.186
	900.00	433.308	768.673	496.984	–5427.143	244.520	–6118.949	–5649.488	–4827.664	280.190
	1000.00	437.400	814.543	526.483	–5383.603	288.060	–6198.146	–5648.376	–4736.427	247.406
	1100.00	440.988	856.404	554.601	–5339.680	331.983	–6281.724	–5649.103	–4645.212	220.583
	1200.00	444.235	894.916	581.377	–5295.416	376.247	–6369.315	–5691.441	–4551.028	198.101
	1300.00	447.240	930.594	606.884	–5250.841	420.822	–6460.613	–5685.455	–4456.236	179.054
	1400.00	450.070	963.842	631.207	–5205.974	465.689	–6555.353	–5679.518	–4361.904	162.745
	1500.00	452.771	994.987	654.432	–5160.831	510.832	–6653.311	–5673.649	–4267.994	148.625
	1600.00	455.373	1024.291	676.641	–5115.423	556.240	–6754.289	–5667.874	–4174.473	136.283
	1700.00	457.900	1051.974	697.913	–5069.759	601.904	–6858.115	–5662.218	–4081.309	125.403
	1800.00	460.367	1078.217	718.318	–5023.845	647.818	–6964.636	–6269.918	–3972.619	115.282

References

Phase	H / S	C_p
SOL	Ku1	e

196.040 SPHENE **CaTiSiO5**

Phase	T [K]	C_p J / (K mol)	S J / (K mol)	−(G−H298)/T J / (K mol)	H kJ / mol	H−H298 kJ / mol	G kJ / mol	ΔH_f kJ / mol	ΔG_f kJ / mol	log K_f [−]
SOL	298.15	138.945	129.202	129.202	−2603.302	0.000	−2641.824	−2603.302	−2461.780	431.294
	300.00	139.545	130.063	129.205	−2603.044	0.258	−2642.063	−2603.311	−2460.902	428.481
	400.00	161.449	173.611	134.993	−2587.855	15.447	−2657.299	−2602.834	−2413.462	315.166
	500.00	172.833	210.973	146.550	−2571.090	32.212	−2676.577	−2601.390	−2366.275	247.203
	600.00	180.075	243.165	160.033	−2553.423	49.879	−2699.322	−2599.641	−2319.414	201.923
	700.00	185.362	271.339	173.963	−2535.139	68.163	−2725.076	−2597.882	−2272.850	169.602
	800.00	189.608	296.376	187.729	−2516.384	86.918	−2753.485	−2596.990	−2226.438	145.372
	900.00	193.247	318.923	201.074	−2497.238	106.064	−2784.269	−2595.470	−2180.215	126.536
	1000.00	196.510	339.455	213.901	−2477.747	125.555	−2817.203	−2594.322	−2134.140	111.476
	1100.00	199.527	358.328	226.184	−2457.944	145.358	−2852.104	−2593.549	−2088.162	99.159
	1200.00	202.377	375.812	237.933	−2437.848	165.454	−2888.822	−2604.091	−2041.503	88.864
	1300.00	205.109	392.119	249.174	−2417.472	185.830	−2927.228	−2601.331	−1994.732	80.149
	1400.00	207.755	407.417	259.936	−2396.829	206.473	−2967.212	−2598.482	−1948.177	72.687
	1500.00	210.338	421.839	270.253	−2375.923	227.379	−3008.682	−2595.551	−1901.829	66.228
	1600.00	212.873	435.495	280.158	−2354.763	248.539	−3051.555	−2592.547	−1855.678	60.582
	1673.00	214.699	445.033	287.145	−2339.156	264.146	−3083.696	−2590.311	−1822.109	56.890
			74.026		123.846					
LIQ	1673.00	279.491	519.059	287.145	−2215.310	387.992	−3083.696	−2466.465	−1822.109	56.890
	1700.00	279.491	523.534	290.864	−2207.764	395.538	−3097.771	−2514.068	−1811.283	55.654
	1800.00	279.491	539.509	304.238	−2179.815	423.487	−3150.931	−2657.728	−1766.258	51.255
	1900.00	279.491	554.620	317.022	−2151.866	451.436	−3205.644	−2647.397	−1717.015	47.204
	2000.00	279.491	568.956	329.264	−2123.916	479.386	−3261.829	−2651.357	−1667.866	43.560

References

Phase	H / S	C_p
SOL	Nb1,S5	S5
LIQ	S5	S5

$CaUO_4$ CALCIUM URANATE 342.105

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL–A	298.15	130.449	143.093	143.093	–1997.417	0.000	–2040.080	–1997.417	–1890.407	331.191
	300.00	130.541	143.900	143.095	–1997.176	0.241	–2040.346	–1997.382	–1889.743	329.033
	400.00	135.520	182.136	148.275	–1983.873	13.544	–2056.727	–1995.464	–1854.150	242.127
	500.00	140.499	212.911	158.221	–1970.072	27.345	–2076.527	–1993.556	–1819.044	190.034
	600.00	145.478	238.967	169.560	–1955.773	41.644	–2099.153	–1991.769	–1784.312	155.338
	700.00	150.457	261.767	181.137	–1940.976	56.441	–2124.213	–1990.182	–1749.865	130.577
	800.00	155.436	282.183	192.513	–1925.681	71.736	–2151.427	–1989.589	–1715.536	112.013
	900.00	160.415	300.778	203.524	–1909.889	87.528	–2180.589	–1988.467	–1681.352	97.583
	1000.00	165.394	317.937	214.118	–1893.599	103.818	–2211.535	–1990.237	–1647.103	86.036
	1025.00	166.638	322.036	216.701	–1889.448	107.969	–2219.535	–1989.942	–1638.528	83.500
			0.898		0.920					
SOL–B	1025.00	166.960	322.934	216.701	–1888.528	108.889	–2219.535	–1989.022	–1638.528	83.500
	1100.00	170.908	334.862	224.354	–1875.858	121.559	–2244.206	–1992.620	–1612.685	76.580
	1200.00	176.172	349.958	234.198	–1858.504	138.913	–2278.454	–1997.848	–1577.604	68.671

References

Phase	H / S	C_p	Remarks	
SOL–A	Nb1/e	Ku1		
SOL–B	Ku1	Ku1	Tk1	MPT= 2123.

179.300 CALCIUM ZIRCONIUM TRIOXIDE **CaZrO3**

Phase	T [K]	C_p J / (K mol)	S J / (K mol)	−(G−H298)/T J / (K mol)	H kJ / mol	H−H298 kJ / mol	G kJ / mol	ΔH_f kJ / mol	ΔG_f kJ / mol	log K_f [−]
SOL	298.15	96.573	100.081	100.081	−1766.903	0.000	−1796.742	−1766.903	−1681.057	294.514
	300.00	96.910	100.680	100.083	−1766.724	0.179	−1796.928	−1766.899	−1680.524	292.605
	400.00	109.134	130.463	104.061	−1756.342	10.561	−1808.527	−1766.108	−1651.826	215.706
	500.00	115.367	155.549	111.920	−1745.088	21.815	−1822.863	−1764.760	−1623.406	169.596
	600.00	119.242	176.949	121.019	−1733.345	33.558	−1839.515	−1763.306	−1595.272	138.881
	700.00	122.003	195.548	130.367	−1721.276	45.627	−1858.160	−1761.951	−1567.376	116.959
	800.00	124.171	211.985	139.562	−1708.964	57.939	−1878.552	−1761.535	−1539.569	100.524
	900.00	125.993	226.718	148.441	−1696.454	70.449	−1900.500	−1760.552	−1511.887	87.748
	1000.00	127.602	240.078	156.947	−1683.773	83.130	−1923.850	−1760.003	−1484.291	77.531
	1100.00	129.070	252.309	165.068	−1670.938	95.965	−1948.478	−1759.901	−1456.728	69.174
	1200.00	130.444	263.599	172.815	−1657.962	108.941	−1974.281	−1770.905	−1428.317	62.173
	1300.00	131.750	274.092	180.206	−1644.851	122.052	−2001.171	−1768.967	−1399.847	56.247
	1400.00	133.007	283.902	187.267	−1631.613	135.290	−2029.076	−1766.988	−1371.527	51.172
	1500.00	134.228	293.121	194.019	−1618.251	148.652	−2057.932	−1764.980	−1343.349	46.780
	1600.00	135.422	301.822	200.488	−1604.769	162.134	−2087.683	−1762.954	−1315.307	42.940
	1700.00	136.594	310.067	206.693	−1591.168	175.735	−2118.281	−1760.921	−1287.391	39.557
	1800.00	137.750	317.907	212.656	−1577.450	189.453	−2149.683	−1912.195	−1255.631	36.437
	1900.00	138.893	325.386	218.394	−1563.618	203.285	−2181.851	−1909.340	−1219.233	33.519
	2000.00	140.026	332.539	223.923	−1549.672	217.231	−2214.749	−1906.516	−1182.985	30.896
	2100.00	141.149	339.398	229.260	−1535.613	231.290	−2248.349	−1903.738	−1146.877	28.527
	2200.00	142.266	345.990	234.417	−1521.442	245.461	−2282.620	−1922.341	−1110.154	26.358
	2300.00	143.376	352.338	239.407	−1507.160	259.743	−2317.538	−1920.109	−1073.287	24.375
	2400.00	144.482	358.464	244.241	−1492.767	274.136	−2353.080	−1917.812	−1036.517	22.559
	2500.00	145.583	364.384	248.929	−1478.264	288.639	−2389.224	−1915.454	−999.845	20.891
	2600.00	146.681	370.115	253.480	−1463.651	303.252	−2425.951	−1913.036	−963.268	19.352
	2623.00	146.933	371.408	254.508	−1460.274	306.629	−2434.478	−1912.472	−954.869	19.015

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	Nb1,e	Tk1	MPT= 2623.

Ca3P2 TRICALCIUM DIPHOSPHIDE 182.182

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	116.305	123.846	123.846	–506.264	0.000	–543.189	–506.264	–481.649	84.383
	300.00	116.357	124.566	123.849	–506.049	0.215	–543.419	–506.278	–481.496	83.836
	400.00	119.160	158.424	128.446	–494.273	11.991	–557.642	–508.728	–472.734	61.733
	500.00	121.964	185.315	137.220	–482.217	24.047	–574.874	–510.016	–463.589	48.431
	600.00	124.767	207.799	147.159	–469.880	36.384	–594.560	–511.519	–454.167	39.539
	700.00	127.570	227.243	157.242	–457.263	49.001	–616.333	–513.367	–444.468	33.167
	800.00	130.373	244.460	167.088	–444.366	61.898	–639.934	–517.860	–434.201	28.350
	900.00	133.177	259.978	176.561	–431.189	75.075	–665.169	–520.361	–423.603	24.585
	1000.00	135.980	274.154	185.621	–417.731	88.533	–691.885	–523.820	–412.676	21.556
	1100.00	138.783	287.246	194.272	–403.993	102.271	–719.963	–528.237	–401.356	19.059

References

Phase	H / S	C_p
SOL	Nb1/Ku1	e

254.099 CALCIUM PYROPHOSPHATE **Ca2P2O7**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−C	298.15	187.763	189.238	189.238	−3333.393	0.000	−3389.814	−3333.393	−3126.549	547.758
	300.00	188.523	190.402	189.242	−3333.045	0.348	−3390.166	−3333.417	−3125.265	544.157
	400.00	217.396	249.059	197.043	−3312.587	20.806	−3412.210	−3335.009	−3055.441	399.000
	500.00	234.078	299.492	212.615	−3289.955	43.438	−3439.701	−3333.735	−2985.675	311.911
	600.00	245.961	343.267	230.823	−3265.927	67.466	−3471.887	−3331.747	−2916.242	253.881
	700.00	255.577	381.924	249.701	−3240.837	92.556	−3508.184	−3329.446	−2847.170	212.458
	800.00	263.986	416.611	268.434	−3214.851	118.542	−3548.140	−3328.488	−2778.256	181.401
	900.00	271.693	448.154	286.676	−3188.063	145.330	−3591.402	−3325.826	−2709.639	157.263
	1000.00	278.964	477.159	304.293	−3160.527	172.866	−3637.686	−3323.440	−2641.305	137.968
	1023.00	280.592	483.521	308.252	−3154.092	179.301	−3648.734	−3322.931	−2625.621	134.065
			1.636		1.674					
SOL−B	1023.00	280.592	485.158	308.252	−3152.418	180.975	−3648.734	−3321.257	−2625.621	134.065
	1100.00	285.950	505.713	321.361	−3130.605	202.788	−3686.890	−3319.659	−2573.322	122.197
	1200.00	292.742	530.887	337.784	−3101.669	231.724	−3738.733	−3458.863	−2502.144	108.916
	1300.00	299.397	554.582	353.558	−3072.061	261.332	−3793.018	−3451.369	−2422.718	97.346
	1400.00	305.953	577.010	368.725	−3041.793	291.600	−3849.607	−3443.331	−2343.889	87.452
	1413.00	306.800	579.842	370.654	−3037.810	295.583	−3857.127	−3442.246	−2333.685	86.270
			4.797		6.778					
SOL−A	1413.00	318.444	584.639	370.654	−3031.032	302.361	−3857.127	−3435.468	−2333.685	86.270
	1500.00	318.444	603.666	383.622	−3003.328	330.065	−3908.826	−3427.200	−2266.097	78.912
	1600.00	318.444	624.218	398.024	−2971.483	361.910	−3970.232	−3417.789	−2188.997	71.463
	1631.00	318.444	630.329	402.382	−2961.611	371.782	−3989.678	−3414.891	−2165.217	69.344
			61.823		100.834					
LIQ	1631.00	405.220	692.152	402.382	−2860.777	472.616	−3989.678	−3314.057	−2165.217	69.344
	1700.00	405.220	708.942	414.486	−2832.817	500.576	−4038.019	−3301.650	−2116.874	65.044

References

Phase	H / S	C_p	Remarks
SOL−C	Tk1/Nb1	Ku1	
SOL−B	Tk1	Ku1	Tetragonal
SOL−A	Tk1	Ku1	monoclinic
LIQ	Tk1	Ku1	

$Ca_3(PO_4)_2$ CALCIUM PHOSPHATE 310.177

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL–B	298.15	227.799	235.999	235.999	–4120.801	0.000	–4191.164	–4120.801	–3884.966	680.630
	300.00	228.073	237.408	236.003	–4120.379	0.422	–4191.602	–4120.825	–3883.503	676.178
	400.00	242.879	305.049	245.126	–4096.832	23.969	–4218.851	–4123.388	–3803.850	496.732
	500.00	257.684	360.836	262.841	–4071.804	48.997	–4252.222	–4123.940	–3723.889	389.032
	600.00	272.490	409.126	283.283	–4045.295	75.506	–4290.771	–4123.909	–3643.872	317.227
	700.00	287.295	452.242	304.392	–4017.306	103.495	–4333.875	–4123.403	–3563.900	265.942
	800.00	302.101	491.572	325.365	–3987.836	132.965	–4381.093	–4124.671	–3483.756	227.466
	900.00	316.906	528.009	345.881	–3956.886	163.915	–4432.094	–4123.021	–3403.741	197.548
	1000.00	331.712	562.165	365.818	–3924.455	196.346	–4486.619	–4121.355	–3323.910	173.623
	1100.00	346.517	594.474	385.149	–3890.543	230.258	–4544.465	–4119.635	–3244.248	154.056
	1200.00	361.323	625.260	403.885	–3855.151	265.650	–4605.463	–4265.814	–3160.718	137.582
	1300.00	376.128	654.766	422.057	–3818.279	302.522	–4669.475	–4255.775	–3069.025	123.315
	1400.00	390.934	683.182	439.700	–3779.926	340.875	–4736.380	–4244.387	–2978.155	111.116
	1423.00	394.339	689.580	443.687	–3770.895	349.906	–4752.167	–4241.576	–2957.375	108.558
			13.231		18.828					
SOL–A	1423.00	376.560	702.811	443.687	–3752.067	368.734	–4752.167	–4222.748	–2957.375	108.558
	1500.00	376.560	722.655	457.502	–3723.072	397.729	–4807.054	–4214.618	–2889.121	100.608
	1600.00	376.560	746.958	474.842	–3685.416	435.385	–4880.548	–4204.157	–2801.096	91.446
	1700.00	376.560	769.786	491.527	–3647.760	473.041	–4956.397	–4193.803	–2713.723	83.383
	1743.00	376.560	779.193	498.508	–3631.568	489.233	–4989.701	–4189.382	–2676.341	80.205
			0.000		0.000					
SOL–1	1743.00	376.560	779.193	498.508	–3631.568	489.233	–4989.701	–4189.382	–2676.341	80.205
	1800.00	376.560	791.310	507.589	–3610.104	510.697	–5034.462	–4643.461	–2615.064	75.887
	1900.00	376.560	811.670	523.063	–3572.448	548.353	–5114.620	–4630.781	–2502.722	68.805
	2000.00	376.560	830.985	537.980	–3534.792	586.009	–5196.761	–4618.214	–2391.044	62.448
	2083.00	376.560	846.296	549.962	–3503.537	617.264	–5266.372	–4607.872	–2298.828	57.647
			80.346		167.360					
LIQ	2083.00	380.744	926.642	549.962	–3336.177	784.624	–5266.372	–4440.512	–2298.828	57.647
	2100.00	380.744	929.737	553.024	–3329.705	791.096	–5282.152	–4438.333	–2281.358	56.746
	2200.00	380.744	947.449	570.553	–3291.630	829.171	–5376.018	–4425.588	–2178.944	51.735
	2300.00	380.744	964.374	587.311	–3253.556	867.245	–5471.615	–4412.969	–2077.107	47.173
	2400.00	380.744	980.578	603.361	–3215.481	905.320	–5568.869	–4400.484	–1975.816	43.003
	2500.00	380.744	996.121	618.763	–3177.407	943.394	–5667.709	–4388.137	–1875.043	39.177

References

Phase	H / S	C_p	Remarks	
SOL–B	Nb1	Tk1,e	Tk1	hexagonal (WHITLOCKITE)
SOL–A	Tk1	e	Tk1	monoclinic
SOL–1	u	e	Tk1	MPT= 2083.
LIQ	e	e		

247.278

CALCIUM LEAD

CaPb

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL	298.15	50.250	80.751	80.751	−121.001	0.000	−145.077	−121.001	−113.411	19.869
	300.00	50.292	81.062	80.752	−120.908	0.093	−145.227	−121.004	−113.364	19.738
	400.00	52.551	95.840	82.752	−115.766	5.235	−154.102	−121.167	−110.792	14.468
	500.00	54.810	107.809	86.602	−110.398	10.603	−164.302	−121.305	−108.182	11.302
	600.00	57.070	118.002	91.006	−104.804	16.197	−175.605	−121.466	−105.543	9.188
	700.00	59.329	126.969	95.515	−98.984	22.017	−187.862	−126.532	−102.076	7.617
	800.00	61.588	135.038	99.960	−92.938	28.063	−200.969	−127.545	−98.472	6.430
	900.00	63.848	142.423	104.273	−86.666	34.335	−214.847	−127.730	−94.828	5.504
	1000.00	66.107	149.267	108.434	−80.168	40.833	−229.435	−128.071	−91.155	4.761
	1100.00	68.367	155.674	112.441	−73.445	47.556	−244.686	−128.567	−87.441	4.152
	1200.00	70.626	161.719	116.297	−66.495	54.506	−260.558	−136.166	−83.058	3.615
	1223.00	71.146	163.065	117.164	−64.865	56.136	−264.293	−135.871	−82.043	3.504

References

Phase	H / S	C_p	Remarks
SOL	Nb1/Ku1	e	Hu1 DPT= 1223. (CaPb2 + LIQ)

287.356

2−CALCIUM LEAD

Ca2Pb

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL	298.15	68.987	105.437	105.437	−212.999	0.000	−244.435	−212.999	−200.420	35.113
	300.00	69.028	105.864	105.438	−212.871	0.128	−244.630	−213.015	−200.342	34.883
	400.00	71.228	126.023	108.172	−205.859	7.140	−256.268	−213.881	−195.988	25.593
	500.00	73.429	142.154	113.407	−198.626	14.373	−269.702	−214.847	−191.406	19.996
	600.00	75.630	155.736	119.359	−191.173	21.826	−284.614	−216.008	−186.612	16.246
	700.00	77.831	167.560	125.418	−183.500	29.499	−300.791	−222.287	−180.807	13.492
	800.00	80.032	178.096	131.356	−175.607	37.392	−318.083	−225.494	−174.583	11.399
	900.00	82.232	187.650	137.088	−167.493	45.506	−336.378	−227.309	−168.117	9.757
	1000.00	84.433	196.427	142.589	−159.160	53.839	−355.588	−229.698	−161.417	8.432
	1100.00	86.634	204.578	147.858	−150.607	62.392	−375.643	−232.662	−154.450	7.334
	1200.00	88.835	212.211	152.906	−141.833	71.166	−396.486	−250.092	−145.956	6.353
	1300.00	91.035	219.408	157.747	−132.840	80.159	−418.070	−249.828	−137.287	5.516
	1383.00	92.862	225.098	161.620	−125.208	87.791	−436.519	−249.434	−130.113	4.914

References

Phase	H / S	C_p	Remarks
SOL	Nb1/Ku1	e	Hu1 MPT= 1383.

CaS CALCIUM SULFIDE 72.144

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	47.428	56.601	56.601	–473.210	0.000	–490.086	–473.210	–468.178	82.023
	300.00	47.462	56.895	56.602	–473.122	0.088	–490.191	–473.211	–468.147	81.512
	400.00	49.196	70.794	58.485	–468.287	4.923	–496.604	–475.531	–466.357	60.900
	500.00	50.523	81.922	62.096	–463.297	9.913	–504.258	–477.137	–463.901	48.463
	600.00	51.529	91.226	66.197	–458.193	15.017	–512.928	–478.467	–461.122	40.144
	700.00	52.332	99.231	70.357	–452.998	20.212	–522.460	–479.648	–458.138	34.187
	800.00	53.004	106.264	74.415	–447.731	25.479	–532.742	–481.782	–454.883	29.701
	900.00	53.589	112.542	78.309	–442.400	30.810	–543.688	–536.129	–450.277	26.133
	1000.00	54.108	118.215	82.020	–437.015	36.195	–555.230	–536.463	–440.724	23.021
	1100.00	54.576	123.395	85.550	–431.580	41.630	–567.315	–537.167	–431.119	20.472
	1200.00	54.999	128.162	88.905	–426.101	47.109	–579.896	–545.193	–420.817	18.318
	1300.00	55.382	132.580	92.096	–420.582	52.628	–592.935	–544.456	–410.482	16.493
	1400.00	55.726	136.697	95.137	–415.026	58.184	–606.402	–543.688	–400.205	14.932
	1500.00	56.030	140.552	98.037	–409.438	63.772	–620.266	–542.893	–389.984	13.580
	1600.00	56.295	144.177	100.809	–403.822	69.388	–634.504	–542.073	–379.817	12.400
	1700.00	56.754	147.604	103.462	–398.168	75.042	–649.095	–541.221	–369.701	11.360
	1800.00	57.210	150.861	106.005	–392.470	80.740	–664.019	–693.632	–355.674	10.321
	1900.00	57.635	153.965	108.448	–386.727	86.483	–679.262	–691.857	–336.946	9.263
	2000.00	58.024	156.932	110.799	–380.944	92.266	–694.808	–690.050	–318.314	8.313
	2100.00	58.390	159.772	113.064	–375.123	98.087	–710.644	–688.217	–299.772	7.456
	2200.00	58.751	162.496	115.249	–369.266	103.944	–726.758	–686.360	–281.318	6.679
	2300.00	59.120	165.116	117.361	–363.373	109.837	–743.140	–684.482	–262.949	5.972
	2400.00	59.504	167.640	119.403	–357.442	115.768	–759.778	–682.583	–244.662	5.325
	2500.00	59.900	170.077	121.382	–351.472	121.738	–776.665	–680.665	–226.454	4.732
	2600.00	60.297	172.434	123.300	–345.462	127.748	–793.791	–678.729	–208.324	4.185
	2700.00	60.674	174.717	125.163	–339.413	133.797	–811.149	–676.779	–190.269	3.681
	2723.00	60.755	175.232	125.583	–338.017	135.193	–815.174	–676.328	–186.126	3.570
			24.585		66.944					
LIQ	2723.00	63.000	199.817	125.583	–271.073	202.137	–815.174	–609.384	–186.126	3.570
	2800.00	63.000	201.574	127.649	–266.222	206.988	–830.628	–607.712	–174.181	3.249
	2900.00	63.000	203.784	130.237	–259.922	213.288	–850.896	–605.566	–158.736	2.859
	3000.00	63.000	205.920	132.724	–253.622	219.588	–871.382	–603.451	–143.364	2.496

References

Phase	H / S	C_p
SOL	Ja1	Ja1
LIQ	Tk1	e

72.144 CALCIUM SULFIDE (GAS) **CaS**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	34.809	232.589	232.589	123.595	0.000	54.249	123.595	76.156	−13.342
	300.00	34.829	232.805	232.590	123.659	0.064	53.818	123.570	75.862	−13.209
	400.00	35.877	242.974	233.969	127.197	3.602	30.007	119.952	60.255	−7.868
	500.00	36.522	251.057	236.606	130.820	7.225	5.292	116.980	45.649	−4.769
	600.00	36.865	257.749	239.588	134.491	10.896	−20.158	114.217	31.648	−2.755
	700.00	37.084	263.449	242.600	138.189	14.594	−46.225	111.539	18.097	−1.350
	800.00	37.303	268.414	245.523	141.908	18.313	−72.823	107.857	5.036	−0.329
	900.00	37.614	272.825	248.316	145.653	22.058	−99.889	51.924	−6.479	0.376
	1000.00	38.084	276.810	250.969	149.436	25.841	−127.374	49.988	−12.868	0.672
	1100.00	38.770	280.471	253.487	153.277	29.682	−155.241	47.690	−19.045	0.904
	1200.00	39.721	283.883	255.879	157.199	33.604	−183.460	38.108	−24.382	1.061
	1300.00	40.982	287.110	258.158	161.231	37.636	−212.011	37.357	−29.558	1.188
	1400.00	42.594	290.203	260.338	165.407	41.812	−240.878	36.745	−34.681	1.294
	1500.00	44.598	293.208	262.429	169.763	46.168	−270.049	36.309	−39.767	1.385
	1600.00	46.695	296.151	264.445	174.325	50.730	−299.517	36.073	−44.829	1.464
	1700.00	48.968	299.050	266.396	179.107	55.512	−329.277	36.054	−49.884	1.533
	1800.00	51.265	301.914	268.289	184.119	60.524	−359.326	−117.043	−50.980	1.479
	1900.00	53.479	304.745	270.134	189.357	65.762	−389.659	−115.772	−47.344	1.302
	2000.00	55.522	307.541	271.934	194.809	71.214	−420.274	−114.297	−43.780	1.143
	2100.00	57.329	310.295	273.696	200.454	76.859	−451.166	−112.639	−40.294	1.002
	2200.00	58.854	312.998	275.421	206.265	82.670	−482.331	−110.828	−36.891	0.876
	2300.00	60.072	315.643	277.112	212.214	88.619	−513.764	−108.895	−33.573	0.762
	2400.00	60.977	318.220	278.772	218.269	94.674	−545.457	−106.872	−30.341	0.660
	2500.00	61.574	320.722	280.400	224.399	100.804	−577.405	−104.794	−27.195	0.568
	2600.00	61.885	323.144	281.998	230.575	106.980	−609.599	−102.693	−24.132	0.485
	2700.00	61.938	325.481	283.565	236.768	113.173	−642.031	−100.598	−21.150	0.409
	2800.00	61.773	327.731	285.103	242.955	119.360	−674.692	−98.535	−18.246	0.340
	2900.00	61.438	329.893	286.610	249.117	125.522	−707.574	−96.527	−15.414	0.278
	3000.00	60.987	331.969	288.088	255.239	131.644	−740.668	−94.591	−12.650	0.220

References

Phase	H / S	C_p
GAS	Ja1	Ja1

CaSO3 CALCIUM SULFITE 120.142

Phase	T [K]	C_p J / (K mol)	S J / (K mol)	−(G−H298)/T J / (K mol)	H kJ / mol	H−H298 kJ / mol	G kJ / mol	ΔH_f kJ / mol	ΔG_f kJ / mol	log K_f [−]
SOL	298.15	91.711	101.378	101.378	−1159.386	0.000	−1189.612	−1159.386	−1075.958	188.503
	300.00	91.801	101.946	101.380	−1159.216	0.170	−1189.800	−1159.387	−1075.440	187.251
	400.00	96.655	129.020	105.039	−1149.793	9.593	−1201.402	−1161.576	−1047.370	136.772
	500.00	101.508	151.109	112.108	−1139.885	19.501	−1215.440	−1162.852	−1018.690	106.422
	600.00	106.361	170.045	120.222	−1129.492	29.894	−1231.519	−1163.632	−989.773	86.167
	700.00	111.215	186.806	128.559	−1118.613	40.773	−1249.377	−1164.011	−960.764	71.693
	800.00	116.068	201.973	136.802	−1107.249	52.137	−1268.827	−1165.054	−931.617	60.828
	900.00	120.922	215.924	144.828	−1095.399	63.987	−1289.731	−1217.990	−901.275	52.309
	1000.00	125.775	228.916	152.594	−1083.065	76.321	−1311.980	−1216.567	−866.161	45.244

References

Phase	H / S	C_p
SOL	Tk1	Tk1,e

136.142 CALCIUM SULFATE **CaSO4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−2	298.15	99.648	106.692	106.692	−1434.108	0.000	−1465.918	−1434.108	−1321.682	231.553
	300.00	99.830	107.309	106.694	−1433.923	0.185	−1466.116	−1434.121	−1320.984	230.004
	400.00	109.704	137.381	110.728	−1423.447	10.661	−1478.399	−1436.742	−1283.106	167.556
	500.00	119.579	162.921	118.670	−1411.983	22.125	−1493.443	−1437.991	−1244.562	130.018
	600.00	129.453	185.596	127.967	−1399.531	34.577	−1510.888	−1438.293	−1205.829	104.977
	700.00	139.327	206.293	137.698	−1386.092	48.016	−1530.497	−1437.739	−1167.120	87.092
	800.00	149.201	225.542	147.489	−1371.666	62.442	−1552.099	−1437.388	−1128.438	73.679
	900.00	159.076	243.685	157.178	−1356.252	77.856	−1575.568	−1488.463	−1088.764	63.190
	1000.00	168.950	260.957	166.699	−1339.850	94.258	−1600.807	−1484.704	−1044.550	54.562
	1100.00	178.824	277.522	176.026	−1322.462	111.646	−1627.736	−1480.473	−1000.736	47.521
	1200.00	179.912	293.177	185.145	−1304.471	129.637	−1656.283	−1483.084	−956.702	41.644
	1300.00	179.912	307.577	194.017	−1286.479	147.629	−1686.330	−1477.041	−913.082	36.688
	1400.00	179.912	320.910	202.610	−1268.488	165.620	−1717.762	−1471.065	−869.926	32.457
	1500.00	179.912	333.323	210.916	−1250.497	183.611	−1750.481	−1465.148	−827.194	28.805
	1600.00	179.912	344.934	218.933	−1232.506	201.602	−1784.400	−1459.288	−784.855	25.623
	1635.00	179.912	348.827	221.672	−1226.209	207.899	−1796.541	−1457.250	−770.124	24.604
			3.835		6.270					
SOL−1	1635.00	179.912	352.662	221.672	−1219.939	214.169	−1796.541	−1450.980	−770.124	24.604
	1700.00	179.912	359.676	226.815	−1208.245	225.863	−1819.694	−1447.212	−743.130	22.834
	1733.00	179.912	363.135	229.378	−1202.307	231.801	−1831.621	−1445.308	−729.481	21.987
			15.934		27.614					
LIQ	1733.00	182.004	379.069	229.378	−1174.693	259.415	−1831.621	−1417.694	−729.481	21.987
	1800.00	182.004	385.973	235.079	−1162.499	271.609	−1857.251	−1567.008	−698.986	20.284
	1900.00	182.004	395.814	243.282	−1144.299	289.809	−1896.345	−1560.254	−650.947	17.896
	2000.00	182.004	405.149	251.144	−1126.098	308.010	−1936.397	−1553.555	−603.263	15.756

References

Phase	H / S	C_p	Remarks
SOL−2	Nb1	Ku1,e	Tk1 TPT= 1468. (SOL−2 − SOL−5)
SOL−1	e	e	
LIQ	Tk1	e	

CaSO3*0.5H2O CALCIUM SULFITE HEMIHYDRATE 129.150

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	112.376	121.298	121.298	−1311.701	0.000	−1347.866	−1311.701	−1199.440	210.137
	300.00	112.466	121.994	121.300	−1311.493	0.208	−1348.091	−1311.704	−1198.743	208.720
	400.00	117.319	155.013	125.770	−1300.004	11.697	−1362.009	−1314.023	−1160.983	151.609
	500.00	122.173	181.713	134.370	−1288.029	23.672	−1378.886	−1315.458	−1122.576	117.275
	600.00	127.026	204.417	144.197	−1275.569	36.132	−1398.219	−1316.426	−1083.899	94.362
	700.00	131.880	224.363	154.253	−1262.624	49.077	−1419.678	−1317.021	−1045.095	77.986
	800.00	136.733	242.290	164.155	−1249.193	62.508	−1443.025	−1318.308	−1006.120	65.693

References

Phase	H / S	C_p
SOL	Nb1	e

CaSO4*0.5H2O CALCIUM SULFATE HEMIHYDRATE 145.149

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL−A	298.15	117.980	130.499	130.499	−1576.740	0.000	−1615.648	−1576.740	−1436.640	251.693
	300.00	118.282	131.230	130.501	−1576.521	0.219	−1615.890	−1576.759	−1435.770	249.990
	400.00	134.599	167.492	135.336	−1563.877	12.863	−1630.874	−1579.409	−1388.587	181.331
	500.00	150.917	199.280	145.003	−1549.602	27.138	−1649.242	−1580.072	−1340.801	140.073
	600.00	167.234	228.238	156.494	−1533.694	43.046	−1670.637	−1579.172	−1293.003	112.566
	700.00	183.552	255.242	168.692	−1516.155	60.585	−1694.824	−1576.801	−1245.478	92.939
	800.00	199.870	280.818	181.122	−1496.984	79.756	−1721.638	−1574.016	−1198.282	78.240

References

Phase	H / S	C_p
SOL−A	Nb1	e

172.172 CALCIUM SULFATE DIHYDRATE (GYPSUM) **CaSO4*2H2O**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	186.018	194.100	194.100	−2022.629	0.000	−2080.500	−2022.629	−1797.174	314.857
	300.00	186.606	195.252	194.103	−2022.284	0.345	−2080.860	−2022.643	−1795.775	312.672
	400.00	218.405	253.291	201.803	−2002.034	20.595	−2103.350	−2024.273	−1720.080	224.619
	500.00	250.203	305.442	217.391	−1978.603	44.026	−2131.324	−2022.460	−1644.207	171.769
	600.00	282.002	353.870	236.144	−1951.993	70.636	−2164.315	−2017.621	−1568.959	136.590
	700.00	313.800	399.729	256.263	−1922.203	100.426	−2202.013	−2009.846	−1494.758	111.540
	800.00	345.598	443.707	276.962	−1889.233	133.396	−2244.199	−2000.194	−1421.762	92.832

References

Phase	H / S	C_p
SOL	Nb1	e

363.734 3−CALCIUM 2−ANTIMONY **Ca3Sb2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	113.813	157.318	157.318	−728.016	0.000	−774.920	−728.016	−710.726	124.516
	300.00	113.868	158.023	157.321	−727.805	0.211	−775.212	−728.039	−710.619	123.730
	400.00	116.817	191.184	161.822	−716.271	11.745	−792.745	−729.355	−704.617	92.014
	500.00	119.767	217.568	170.420	−704.442	23.574	−813.226	−730.844	−698.265	72.947
	600.00	122.717	239.665	180.168	−692.318	35.698	−836.117	−732.651	−691.586	60.208
	700.00	125.666	258.803	190.064	−679.899	48.117	−861.061	−734.949	−684.569	51.083
	800.00	128.616	275.776	199.737	−667.184	60.832	−887.806	−740.096	−676.905	44.197
	900.00	131.566	291.095	209.050	−654.175	73.841	−916.161	−743.519	−668.813	38.817
	1000.00	134.516	305.110	217.965	−640.871	87.145	−945.981	−787.887	−656.053	34.269

References

Phase	H / S	C_p	Remarks	
SOL	Nb1/Ku1	e	Tk1	DPT= 1098. (LIQ + CaSb)

CaSe — CALCIUM SELENIDE — 119.038

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	48.101	66.998	66.998	−368.192	0.000	−388.168	−368.192	−363.218	63.634
	300.00	48.116	67.296	66.999	−368.103	0.089	−388.292	−368.197	−363.188	63.237
	400.00	48.953	81.253	68.897	−363.250	4.942	−395.751	−368.585	−361.466	47.203
	500.00	49.790	92.266	72.507	−358.312	9.880	−404.445	−375.152	−359.531	37.560
	600.00	50.626	101.418	76.584	−353.292	14.900	−414.142	−376.504	−356.282	31.017
	700.00	51.463	109.285	80.706	−348.187	20.005	−424.686	−377.980	−352.797	26.326
	800.00	52.300	116.211	84.720	−342.999	25.193	−435.968	−380.348	−348.999	22.787
	900.00	53.137	122.420	88.570	−337.727	30.465	−447.905	−382.062	−344.981	20.022
	1000.00	53.974	128.061	92.241	−332.372	35.820	−460.433	−384.105	−340.754	17.799
	1100.00	54.810	133.245	95.736	−326.932	41.260	−473.502	−439.788	−331.353	15.735
	1200.00	55.647	138.050	99.065	−321.410	46.782	−487.070	−447.989	−320.826	13.965
	1300.00	56.484	142.537	102.238	−315.803	52.389	−501.101	−447.367	−310.253	12.466
	1400.00	57.321	146.754	105.269	−310.113	58.079	−515.568	−446.650	−299.732	11.183
	1500.00	58.158	150.737	108.168	−304.339	63.853	−530.444	−445.836	−289.266	10.073
	1600.00	58.994	154.517	110.948	−298.481	69.711	−545.709	−444.926	−278.857	9.104
	1700.00	59.831	158.119	113.618	−292.540	75.652	−561.342	−443.920	−268.508	8.250
	1800.00	60.668	161.562	116.186	−286.515	81.677	−577.327	−596.121	−254.257	7.378

References

Phase	H / S	C_p
SOL	Nb1,Mi1	e

CaSi — CALCIUM SILICON — 68.163

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	46.419	45.187	45.187	−150.996	0.000	−164.469	−150.996	−146.508	25.668
	300.00	46.442	45.474	45.188	−150.910	0.086	−164.552	−150.994	−146.480	25.504
	400.00	47.698	59.007	47.025	−146.203	4.793	−169.806	−150.984	−144.981	18.933
	500.00	48.953	69.785	50.534	−141.371	9.625	−176.263	−151.123	−143.468	14.988
	600.00	50.208	78.821	54.516	−136.413	14.583	−183.705	−151.400	−141.913	12.355
	700.00	51.463	86.655	58.559	−131.329	19.667	−191.988	−151.832	−140.300	10.469
	800.00	52.718	93.609	62.514	−126.120	24.876	−201.007	−153.173	−138.522	9.045
	900.00	53.974	99.891	66.323	−120.785	30.211	−210.687	−153.870	−136.652	7.931
	1000.00	55.229	105.643	69.972	−115.325	35.671	−220.968	−154.904	−134.687	7.035
	1100.00	56.484	110.965	73.459	−109.740	41.256	−231.801	−156.270	−132.601	6.297
	1200.00	57.739	115.934	76.794	−104.028	46.968	−243.149	−164.914	−129.761	5.648
	1300.00	58.994	120.605	79.986	−98.192	52.804	−254.978	−164.748	−126.838	5.096
	1400.00	60.250	125.023	83.047	−92.230	58.766	−267.262	−164.498	−123.931	4.624
	1500.00	61.505	129.222	85.986	−86.142	64.854	−279.975	−164.164	−121.044	4.215
	1518.00	61.731	129.957	86.503	−85.033	65.963	−282.308	−164.095	−120.527	4.147

References

Phase	H / S	C_p	Remarks	
SOL	Nb1/e	e	Tk1	MPT= 1518.

96.249

CALCIUM 2–SILICON

CaSi2

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	68.153	50.626	50.626	–150.996	0.000	–166.090	–150.996	–142.518	24.969
	300.00	68.199	51.048	50.628	–150.870	0.126	–166.184	–150.991	–142.466	24.805
	400.00	70.710	71.012	53.333	–143.924	7.072	–172.329	–150.865	–139.650	18.236
	500.00	73.220	87.060	58.524	–136.728	14.268	–180.258	–150.919	–136.843	14.296
	600.00	75.730	100.631	64.439	–129.280	21.716	–189.659	–151.083	–134.014	11.667
	700.00	78.241	112.494	70.473	–121.582	29.414	–200.327	–151.348	–131.150	9.787
	800.00	80.751	123.105	76.400	–113.632	37.364	–212.116	–152.457	–128.148	8.367
	900.00	83.262	132.761	82.134	–105.432	45.564	–224.917	–152.850	–125.089	7.260
	1000.00	85.772	141.664	87.647	–96.980	54.016	–238.643	–153.501	–121.972	6.371
	1100.00	88.282	149.956	92.939	–88.277	62.719	–253.229	–154.406	–118.777	5.640
	1200.00	90.793	157.745	98.018	–79.323	71.673	–268.618	–162.506	–114.873	5.000
	1263.00	92.374	162.431	101.115	–73.554	77.442	–278.704	–162.026	–112.384	4.648

References

Phase	H / S	C_p	Remarks	
SOL	Nb1/e	e	Tk1	MPT= 1263.

108.242

2–CALCIUM SILICON

Ca2Si

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	72.726	81.170	81.170	–208.999	0.000	–233.200	–208.999	–202.889	35.545
	300.00	72.760	81.620	81.171	–208.864	0.135	–233.350	–208.995	–202.851	35.320
	400.00	74.559	102.798	84.046	–201.498	7.501	–242.618	–208.900	–200.823	26.225
	500.00	76.358	119.628	89.536	–193.953	15.046	–253.767	–209.020	–198.795	20.768
	600.00	78.157	133.709	95.755	–186.227	22.772	–266.452	–209.387	–196.720	17.126
	700.00	79.956	145.892	102.067	–178.321	30.678	–280.446	–210.063	–194.560	14.518
	800.00	81.755	156.686	108.232	–170.236	38.763	–295.585	–212.569	–192.096	12.543
	900.00	83.554	166.419	114.165	–161.970	47.029	–311.748	–213.807	–189.470	10.997
	1000.00	85.354	175.316	119.842	–153.525	55.474	–328.841	–215.739	–186.669	9.751
	1100.00	87.153	183.535	125.263	–144.899	64.100	–346.788	–218.362	–183.641	8.720
	1183.00	88.646	189.929	129.578	–137.604	71.395	–362.290	–235.619	–179.911	7.944

References

Phase	H / S	C_p	Remarks	
SOL	Nb1/e	e	Tk1	DPT= 1183. (LIQ + CaSi)

CaSn — CALCIUM TIN — 158.788

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	48.129	70.710	70.710	−159.000	0.000	−180.082	−159.000	−152.468	26.712
	300.00	48.158	71.007	70.711	−158.911	0.089	−180.213	−159.008	−152.428	26.540
	400.00	49.706	85.074	72.618	−154.018	4.982	−188.047	−159.482	−150.166	19.610
	500.00	51.254	96.331	76.271	−148.970	10.030	−197.135	−160.100	−147.769	15.437
	600.00	52.802	105.813	80.425	−143.767	15.233	−207.255	−167.711	−143.926	12.530
	700.00	54.350	114.069	84.653	−138.409	20.591	−218.257	−168.280	−139.917	10.441
	800.00	55.898	121.427	88.798	−132.897	26.103	−230.039	−169.654	−135.731	8.862
	900.00	57.446	128.100	92.800	−127.230	31.770	−242.520	−170.303	−131.455	7.629
	1000.00	58.994	134.233	96.641	−121.408	37.592	−255.641	−171.210	−127.092	6.639
	1100.00	60.542	139.929	100.320	−115.431	43.569	−269.352	−172.375	−122.626	5.823
	1200.00	62.091	145.263	103.845	−109.299	49.701	−283.614	−180.744	−117.426	5.111
	1260.00	63.019	148.315	105.891	−105.546	53.454	−292.422	−180.455	−114.267	4.737

References

Phase	H / S	C_p	Remarks
SOL	Nb1/Ku1	e	Hu1

MPT(approx.)= DPT= 1260. (LIQ + Ca2Sn)

Ca2Sn — 2−CALCIUM TIN — 198.866

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	71.596	100.416	100.416	−313.997	0.000	−343.936	−313.997	−303.972	53.255
	300.00	71.630	100.859	100.417	−313.865	0.132	−344.122	−314.008	−303.910	52.915
	400.00	73.471	121.718	103.249	−306.609	7.388	−355.297	−314.695	−300.446	39.234
	500.00	75.312	138.310	108.657	−299.170	14.827	−368.325	−315.615	−296.783	31.005
	600.00	77.153	152.204	114.787	−291.547	22.450	−382.869	−323.664	−291.600	25.386
	700.00	78.994	164.235	121.011	−283.740	30.257	−398.704	−324.849	−286.166	21.354
	800.00	80.835	174.904	127.093	−275.748	38.249	−415.671	−327.786	−280.361	18.306
	900.00	82.676	184.531	132.948	−267.573	46.424	−433.651	−329.398	−274.343	15.922
	1000.00	84.517	193.337	138.553	−259.213	54.784	−452.550	−331.651	−268.111	14.005
	1100.00	86.358	201.479	143.908	−250.669	63.328	−472.296	−334.546	−261.622	12.423
	1200.00	88.199	209.072	149.025	−241.942	72.055	−492.828	−351.974	−253.608	11.039
	1300.00	90.040	216.204	153.921	−233.030	80.967	−514.095	−351.765	−245.419	9.861
	1395.00	91.789	222.615	158.383	−224.393	89.604	−534.941	−351.396	−237.659	8.899

References

Phase	H / S	C_p	Remarks
SOL	Nb1/Ku1	e	Hu1

MPT= 1395.

167.678

CALCIUM TELLURIDE

CaTe

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	41.611	76.567	76.567	−292.880	0.000	−315.709	−292.880	−288.601	50.562
	300.00	41.631	76.825	76.568	−292.803	0.077	−315.850	−292.897	−288.575	50.245
	400.00	42.677	88.944	78.213	−288.588	4.292	−324.165	−293.942	−286.982	37.476
	500.00	43.723	98.580	81.355	−284.268	8.612	−333.558	−295.221	−285.099	29.784
	600.00	44.769	106.644	84.916	−279.843	13.037	−343.829	−296.782	−282.934	24.632
	700.00	45.815	113.624	88.529	−275.314	17.566	−354.850	−298.667	−280.481	20.930
	800.00	46.861	119.810	92.060	−270.680	22.200	−366.528	−319.266	−275.763	18.005
	900.00	47.907	125.389	95.458	−265.942	26.938	−378.792	−321.764	−270.179	15.681
	1000.00	48.953	130.491	98.710	−261.099	31.781	−391.590	−324.570	−264.299	13.806
	1100.00	49.999	135.206	101.816	−256.151	36.729	−404.877	−327.685	−258.124	12.257
	1200.00	51.045	139.601	104.783	−251.099	41.781	−418.620	−338.054	−251.035	10.927
	1300.00	52.091	143.728	107.622	−245.942	46.938	−432.789	−339.592	−243.721	9.793
	1400.00	53.137	147.627	110.342	−240.681	52.199	−447.358	−387.464	−233.800	8.723
	1500.00	54.183	151.328	112.952	−235.315	57.565	−462.307	−387.219	−222.832	7.760

References

Phase	H / S	C_p
SOL	Tk1	e

237.957

CALCIUM METAVANADATE

Ca(VO3)2

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	170.755	179.100	179.100	−2329.270	0.000	−2382.669	−2329.270	−2169.585	380.102
	300.00	170.975	180.157	179.104	−2328.954	0.316	−2383.001	−2329.256	−2168.595	377.586
	400.00	182.891	230.976	185.952	−2311.261	18.009	−2403.651	−2328.183	−2115.185	276.215
	500.00	194.807	273.067	199.278	−2292.376	36.894	−2428.909	−2326.491	−2062.119	215.428
	600.00	206.723	309.637	214.686	−2272.299	56.971	−2458.082	−2324.195	−2009.450	174.938
	700.00	218.639	342.399	230.629	−2251.031	78.239	−2490.710	−2321.309	−1957.213	146.049
	800.00	230.555	372.372	246.499	−2228.571	100.699	−2526.469	−2318.569	−1905.338	124.406
	900.00	242.471	400.215	262.049	−2204.920	124.350	−2565.114	−2314.414	−1853.929	107.599
	1000.00	254.387	426.379	277.186	−2180.077	149.193	−2606.456	−2309.838	−1803.005	94.179
	1053.00	260.703	439.678	285.032	−2166.427	162.843	−2629.408	−2307.238	−1776.210	88.110

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	e	Tk1	DPT= 1053. (LIQ + Ca2V2O7)

$Ca_2V_2O_7$ CALCIUM PYROVANADATE 294.035

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	213.897	220.497	220.497	−3083.357	0.000	−3149.098	−3083.357	−2893.083	506.856
	300.00	214.120	221.821	220.501	−3082.961	0.396	−3149.507	−3083.337	−2891.902	503.525
	400.00	226.221	285.076	229.044	−3060.944	22.413	−3174.975	−3082.000	−2828.278	369.335
	500.00	238.321	336.856	245.576	−3037.717	45.640	−3206.145	−3080.189	−2765.047	288.863
	600.00	250.421	381.376	264.581	−3013.280	70.077	−3242.106	−3077.971	−2702.221	235.249
	700.00	262.521	420.888	284.139	−2987.633	95.724	−3282.254	−3075.399	−2639.795	196.984
	800.00	274.621	456.732	303.506	−2960.776	122.581	−3326.162	−3073.972	−2577.577	168.299
	900.00	286.721	489.777	322.390	−2932.709	150.648	−3373.508	−3070.574	−2515.732	146.009
	1000.00	298.821	520.612	340.686	−2903.432	179.925	−3424.043	−3067.179	−2454.265	128.198
	1100.00	310.921	549.660	358.376	−2872.944	210.413	−3477.571	−3063.770	−2393.138	113.641
	1200.00	323.022	577.233	375.474	−2841.247	242.110	−3533.926	−3074.228	−2331.090	101.470
	1285.00	333.307	599.687	389.568	−2813.353	270.004	−3583.951	−3067.606	−2278.677	92.627

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	e	Tk1	TPT= 1248. / DPT= 1285. (LIQ + Ca3(VO4)2)

$Ca_3(VO_4)_2$ CALCIUM ORTHOVANADATE 350.112

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	257.028	274.901	274.901	−3777.939	0.000	−3859.901	−3777.939	−3560.953	623.864
	300.00	257.216	276.492	274.906	−3777.463	0.476	−3860.411	−3777.913	−3559.607	619.783
	400.00	267.349	351.876	285.116	−3751.235	26.704	−3891.986	−3776.425	−3487.057	455.363
	500.00	277.483	412.622	304.731	−3723.993	53.946	−3930.304	−3774.822	−3414.900	356.752
	600.00	287.617	464.109	327.108	−3695.739	82.200	−3974.204	−3773.224	−3343.066	291.040
	700.00	297.750	509.206	349.965	−3666.470	111.469	−4022.914	−3771.724	−3271.494	244.122
	800.00	307.884	549.627	372.438	−3636.188	141.751	−4075.890	−3772.583	−3199.852	208.929
	900.00	318.017	586.475	394.202	−3604.893	173.046	−4132.721	−3771.131	−3128.354	181.565
	1000.00	328.151	620.506	415.152	−3572.585	205.354	−4193.091	−3770.319	−3056.984	159.680
	1100.00	338.285	652.257	435.279	−3539.263	238.676	−4256.746	−3770.127	−2985.665	141.777
	1200.00	348.418	682.127	454.617	−3504.928	273.011	−4323.480	−3791.377	−2912.488	126.777
	1300.00	358.552	710.415	473.215	−3469.579	308.360	−4393.119	−3785.801	−2839.469	114.091
	1400.00	368.686	737.358	491.128	−3433.218	344.721	−4465.518	−3779.579	−2766.903	103.234
	1500.00	378.819	763.140	508.409	−3395.842	382.097	−4540.552	−3772.716	−2694.805	93.841
	1600.00	388.953	787.912	525.108	−3357.454	420.485	−4618.112	−3765.221	−2623.185	85.638
	1663.00	395.337	803.055	535.352	−3332.749	445.190	−4668.230	−3760.179	−2578.314	80.985

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	e	Tk1	DPT= 1663. (LIQ + CaO)

287.926 CALCIUM TUNGSTATE **CaWO4**

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	124.440	126.399	126.399	–1645.149	0.000	–1682.835	–1645.149	–1538.418	269.524
	300.00	124.524	127.169	126.401	–1644.919	0.230	–1683.069	–1645.119	–1537.756	267.747
	400.00	129.102	163.619	131.340	–1632.237	12.912	–1697.685	–1643.420	–1502.220	196.170
	500.00	133.679	192.919	140.818	–1619.098	26.051	–1715.558	–1641.606	–1467.128	153.270
	600.00	138.256	217.696	151.617	–1605.502	39.647	–1736.119	–1639.745	–1432.407	124.702
	700.00	142.833	239.352	162.635	–1591.447	53.702	–1758.994	–1637.867	–1397.999	104.320
	800.00	147.411	258.723	173.456	–1576.935	68.214	–1783.914	–1636.715	–1363.770	89.045
	900.00	151.988	276.350	183.924	–1561.965	83.184	–1810.680	–1634.716	–1329.773	77.178
	1000.00	156.565	292.601	193.989	–1546.537	98.612	–1839.138	–1632.829	–1295.992	67.696

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	e	Tk1	MPT= 1853.

400.080 CALCIUM ORTHOTUNGSTATE **Ca3WO6**

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	202.260	200.832	200.832	–2987.953	0.000	–3047.831	–2987.953	–2817.550	493.623
	300.00	202.845	202.085	200.836	–2987.578	0.375	–3048.204	–2987.927	–2816.493	490.395
	400.00	224.452	263.783	209.101	–2966.080	21.873	–3071.594	–2985.530	–2759.666	360.375
	500.00	236.050	315.221	225.330	–2943.007	44.946	–3100.618	–2982.228	–2703.573	282.440
	600.00	243.707	358.974	244.049	–2918.998	68.955	–3134.382	–2978.830	–2648.164	230.543
	700.00	249.504	396.993	263.242	–2894.327	93.626	–3172.222	–2975.723	–2593.304	193.515
	800.00	254.310	430.632	282.103	–2869.130	118.823	–3213.635	–2975.306	–2538.584	165.753
	900.00	258.540	460.834	300.313	–2843.484	144.469	–3258.234	–2972.978	–2484.145	144.176
	1000.00	262.411	488.277	317.757	–2817.434	170.519	–3305.710	–2971.700	–2429.908	126.925

References

Phase	H / S	C_p	Remarks	
SOL	Tk1	e	Tk1	MPT= 2523.

CaZn

CALCIUM ZINC

105.468

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	49.277	66.526	66.526	−73.220	0.000	−93.055	−73.220	−68.293	11.965
	300.00	49.329	66.831	66.527	−73.129	0.091	−93.178	−73.223	−68.262	11.885
	400.00	52.174	81.411	68.495	−68.054	5.166	−100.618	−73.303	−66.593	8.696
	500.00	55.020	93.359	72.307	−62.694	10.526	−109.374	−73.314	−64.914	6.782
	600.00	57.865	103.642	76.692	−57.050	16.170	−119.235	−73.318	−63.234	5.505
	700.00	60.710	112.776	81.206	−51.121	22.099	−130.064	−80.697	−61.473	4.587
	712.00	61.051	113.811	81.746	−50.390	22.830	−131.423	−80.727	−61.143	4.486

References

Phase	H / S	C_p	Remarks	
SOL	Ku1	e	Hu1	DPT= 712. (CaZn2 + LIQ)

CaZn2

CALCIUM 2−ZINC

170.858

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	74.821	101.671	101.671	−94.140	0.000	−124.453	−94.140	−87.279	15.291
	300.00	74.873	102.134	101.673	−94.002	0.138	−124.642	−94.142	−87.236	15.189
	400.00	77.655	124.055	104.643	−86.375	7.765	−135.997	−94.252	−84.917	11.089
	500.00	80.437	141.682	110.343	−78.471	15.669	−149.311	−94.397	−82.569	8.626
	600.00	83.220	156.593	116.839	−70.288	23.852	−164.244	−94.651	−80.181	6.980
	700.00	86.002	169.631	123.469	−61.827	32.313	−180.568	−109.739	−77.584	5.789
	800.00	88.784	181.296	129.980	−53.087	41.053	−198.124	−111.318	−72.841	4.756
	900.00	91.567	191.914	136.280	−44.070	50.070	−216.792	−112.047	−67.989	3.946
	977.00	93.709	199.518	140.968	−36.937	57.203	−231.865	−112.701	−64.193	3.432

References

Phase	H / S	C_p	Remarks	
SOL	Ku1	e	Hu1	MPT= 977.

112.411 CADMIUM **Cd**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	25.930	51.798	51.798	0.000	0.000	−15.444	0.000	0.000	0.000
	300.00	25.953	51.958	51.798	0.048	0.048	−15.540	0.000	0.000	0.000
	400.00	27.168	59.591	52.831	2.704	2.704	−21.132	0.000	0.000	0.000
	500.00	28.384	65.784	54.821	5.482	5.482	−27.410	0.000	0.000	0.000
	594.00	29.527	70.769	56.959	8.204	8.204	−33.834	0.000	0.000	0.000
			10.424		6.192					
LIQ	594.00	29.706	81.194	56.959	14.396	14.396	−33.834	0.000	0.000	0.000
	600.00	29.706	81.492	57.203	14.574	14.574	−34.322	0.000	0.000	0.000
	700.00	29.706	86.071	61.008	17.544	17.544	−42.706	0.000	0.000	0.000
	800.00	29.706	90.038	64.394	20.515	20.515	−51.516	0.000	0.000	0.000
	900.00	29.706	93.537	67.442	23.486	23.486	−60.698	0.000	0.000	0.000
	1000.00	29.706	96.667	70.211	26.456	26.456	−70.211	0.000	0.000	0.000
	1039.00	29.706	97.804	71.225	27.615	27.615	−74.003	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks
SOL	Hu1	Hu1	
LIQ	Hu1	Hu1	BPT= 1039., L= 97.40 kJ

112.411 CADMIUM (GAS) **Cd**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	20.786	167.741	167.741	111.796	0.000	61.784	111.796	77.227	−13.530
	300.00	20.786	167.870	167.742	111.834	0.038	61.473	111.786	77.013	−13.409
	400.00	20.786	173.850	168.557	113.913	2.117	44.373	111.209	65.506	−8.554
	500.00	20.786	178.488	170.097	115.992	4.196	26.748	110.510	54.158	−5.658
	600.00	20.786	182.278	171.821	118.070	6.274	8.704	103.497	43.025	−3.746
	700.00	20.786	185.482	173.549	120.149	8.353	−9.689	102.605	33.017	−2.464
	800.00	20.786	188.258	175.218	122.228	10.432	−28.379	101.712	23.137	−1.511
	900.00	20.786	190.706	176.806	124.306	12.510	−47.329	100.820	13.369	−0.776
	1000.00	20.786	192.896	178.307	126.385	14.589	−66.511	99.928	3.700	−0.193
	1100.00	20.786	194.877	179.725	128.463	16.667	−85.901	0.000	0.000	0.000
	1200.00	20.786	196.686	181.064	130.542	18.746	−105.481	0.000	0.000	0.000
	1300.00	20.786	198.349	182.331	132.621	20.825	−125.234	0.000	0.000	0.000
	1400.00	20.786	199.890	183.530	134.699	22.903	−145.147	0.000	0.000	0.000
	1500.00	20.786	201.324	184.669	136.778	24.982	−165.208	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1

Cd3As2 — CADMIUM ARSENIDE — 487.076

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	125.295	206.832	206.832	−41.840	0.000	−103.507	−41.840	−35.885	6.287
	300.00	125.494	207.608	206.834	−41.608	0.232	−103.890	−41.843	−35.848	6.242
	400.00	132.931	244.857	211.863	−28.642	13.198	−126.585	−41.858	−33.840	4.419
	500.00	137.013	274.994	221.572	−15.129	26.711	−152.626	−41.812	−31.843	3.327
	600.00	139.776	300.232	232.636	−1.282	40.558	−181.421	−60.486	−29.656	2.582
	700.00	141.915	321.945	243.879	12.806	54.646	−212.555	−60.665	−24.502	1.828
	800.00	143.722	341.016	254.853	27.090	68.930	−245.723	−60.757	−19.328	1.262
	900.00	145.335	358.038	265.389	41.544	83.384	−280.690	−60.780	−14.148	0.821
	994.00	146.742	372.546	274.847	55.272	97.112	−315.038	−60.711	−9.280	0.488

References

Phase	H / S	C_p	Remarks
SOL	Tk1	e	Tk1 TPT= 503., 738., 868./ MPT= 994., L= 122.6 kJ

Cd3(AsO4)2 — CADMIUM ARSENATE — 615.071

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	258.824	301.708	301.708	−1934.347	0.000	−2024.301	−1934.347	−1712.021	299.939
	300.00	259.454	303.311	301.713	−1933.868	0.479	−2024.861	−1934.320	−1710.641	297.849
	400.00	284.153	381.692	312.232	−1906.563	27.784	−2059.240	−1931.881	−1636.403	213.692
	500.00	299.512	446.849	332.825	−1877.335	57.012	−2100.760	−1928.355	−1562.928	163.278
	600.00	311.193	502.525	356.580	−1846.780	87.567	−2148.295	−1942.959	−1490.024	129.718
	700.00	321.139	551.259	380.982	−1815.153	119.194	−2201.034	−1938.619	−1414.870	105.579
	800.00	330.160	594.737	405.032	−1782.583	151.764	−2258.372	−1933.772	−1340.374	87.517
	900.00	338.642	634.118	428.332	−1749.139	185.208	−2319.845	−1928.427	−1266.515	73.507
	914.00	339.800	639.354	431.524	−1744.390	189.957	−2328.760	−1927.637	−1256.225	71.793

References

Phase	H / S	C_p
SOL	G1	G1

272.219

CADMIUM BROMIDE

CdBr2

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	76.567	137.235	137.235	−316.185	0.000	−357.102	−316.185	−296.277	51.906
	300.00	76.626	137.709	137.237	−316.043	0.142	−357.356	−316.231	−296.153	51.565
	400.00	79.810	160.189	140.280	−308.222	7.963	−372.297	−345.548	−283.348	37.001
	500.00	82.994	178.340	146.133	−300.081	16.104	−389.251	−343.877	−267.988	27.997
	600.00	86.178	193.753	152.816	−291.623	24.562	−407.875	−348.229	−252.918	22.018
	700.00	89.362	207.277	159.649	−282.846	33.339	−427.939	−346.158	−237.192	17.699
	800.00	92.546	219.417	166.374	−273.750	42.435	−449.284	−343.781	−221.784	14.481
	841.15	93.856	224.092	169.084	−269.915	46.270	−458.410	−342.713	−215.536	13.385
			39.643		33.346					
LIQ	841.15	101.671	263.735	169.084	−236.569	79.616	−458.410	−309.367	−215.536	13.385
	900.00	101.671	270.610	175.500	−230.586	85.599	−474.135	−307.344	−209.040	12.132
	1000.00	101.671	281.322	185.556	−220.419	95.766	−501.741	−303.914	−198.301	10.358
	1100.00	101.671	291.013	194.710	−210.252	105.933	−530.366	−399.526	−182.026	8.644
	1137.00	101.671	294.376	197.899	−206.490	109.695	−541.196	−397.931	−174.736	8.028

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	Pa2,T2		
LIQ	T1	Pa2	Tk1	BPT= 1137., L= 102.5 kJ

172.420

CADMIUM CARBONATE

CdCO3

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	82.390	92.466	92.466	−751.865	0.000	−779.434	−751.865	−670.532	117.474
	300.00	82.634	92.977	92.468	−751.712	0.153	−779.605	−751.858	−670.027	116.662
	400.00	95.814	118.554	95.867	−742.790	9.075	−790.212	−751.085	−642.846	83.947
	500.00	108.993	141.350	102.719	−732.550	19.315	−803.225	−749.542	−615.949	64.348
	600.00	122.173	162.387	110.931	−720.991	30.874	−818.423	−753.395	−589.374	51.310

References

Phase	H / S	C_p
SOL	St1	e

CdCl2 CADMIUM CHLORIDE 183.316

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	74.565	115.269	115.269	−391.497	0.000	−425.865	−391.497	−343.899	60.250
	300.00	74.631	115.731	115.271	−391.359	0.138	−426.078	−391.470	−343.603	59.827
	400.00	77.716	137.641	118.237	−383.735	7.762	−438.792	−389.969	−327.873	42.816
	500.00	80.324	155.269	123.937	−375.831	15.666	−453.465	−388.414	−312.527	32.650
	600.00	82.743	170.129	130.428	−367.677	23.820	−469.754	−392.987	−297.439	25.894
	700.00	85.072	183.060	137.043	−359.285	32.212	−487.427	−391.243	−281.649	21.017
	800.00	87.355	194.569	143.527	−350.664	40.833	−506.319	−389.297	−266.123	17.376
	841.00	88.282	198.958	146.123	−347.063	44.434	−514.387	−388.440	−259.832	16.138
			37.810		31.798					
LIQ	841.00	111.294	236.768	146.123	−315.265	76.232	−514.387	−356.642	−259.832	16.138
	900.00	111.294	244.314	152.316	−308.699	82.798	−528.581	−354.028	−253.130	14.691
	1000.00	111.294	256.040	162.112	−297.569	93.928	−553.609	−349.611	−242.156	12.649
	1100.00	111.294	266.647	171.141	−286.440	105.057	−579.752	−444.242	−225.744	10.720
	1200.00	111.294	276.331	179.509	−275.310	116.187	−606.908	−438.955	−206.114	8.972
	1236.00	111.294	279.621	182.377	−271.304	120.193	−616.915	−437.054	−199.157	8.417

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	Pa2		
LIQ	Pa2	Pa2	Tk1	BPT= 1236., L= 121. kJ

150.408 CADMIUM FLUORIDE **CdF2**

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	66.901	83.680	83.680	–700.402	0.000	–725.351	–700.402	–649.444	113.780
	300.00	66.944	84.094	83.681	–700.278	0.124	–725.506	–700.384	–649.128	113.023
	400.00	69.245	103.668	86.335	–693.469	6.933	–734.936	–699.444	–632.186	82.555
	500.00	71.546	119.367	91.421	–686.429	13.973	–746.112	–698.546	–615.476	64.298
	600.00	73.848	132.614	97.210	–679.159	21.243	–758.728	–703.841	–598.883	52.137
	700.00	76.149	144.171	103.110	–671.660	28.742	–772.579	–702.862	–581.466	43.390
	800.00	78.450	154.489	108.899	–663.930	36.472	–787.521	–701.709	–564.200	36.838
	900.00	80.751	163.862	114.493	–655.970	44.432	–803.446	–700.367	–547.090	31.752
	1000.00	83.052	172.489	119.867	–647.779	52.623	–820.269	–698.828	–530.140	27.692
	1100.00	85.354	180.513	125.020	–639.359	61.043	–837.923	–796.121	–507.473	24.098
	1200.00	87.655	188.038	129.961	–630.709	69.693	–856.355	–793.277	–481.357	20.953
	1300.00	89.956	195.145	134.704	–621.828	78.574	–875.517	–790.222	–455.486	18.302
	1345.00	90.992	198.224	136.778	–617.757	82.645	–884.368	–788.777	–443.923	17.240
			16.799		22.594					
LIQ	1345.00	92.048	215.023	136.778	–595.163	105.239	–884.368	–766.183	–443.923	17.240
	1400.00	92.048	218.712	139.925	–590.100	110.302	–896.297	–764.335	–430.783	16.073
	1500.00	92.048	225.062	145.391	–580.895	119.507	–918.489	–760.986	–407.074	14.176
	1600.00	92.048	231.003	150.558	–571.691	128.711	–941.296	–757.650	–383.589	12.523
	1700.00	92.048	236.583	155.456	–562.486	137.916	–964.678	–754.325	–360.312	11.071
	1800.00	92.048	241.845	160.111	–553.281	147.121	–988.602	–751.012	–337.231	9.786
	1900.00	92.048	246.822	164.545	–544.076	156.326	–1013.037	–747.708	–314.333	8.642
	2000.00	92.048	251.543	168.778	–534.871	165.531	–1037.957	–744.415	–291.609	7.616
	2024.00	92.048	252.641	169.766	–532.662	167.740	–1044.008	–743.626	–286.180	7.386

References

Phase	H / S	C_p	Remarks	
SOL	Tk1	e		
LIQ	Tk1	e	Tk1	BPT= 2024., L= 201. kJ

CdI2 — CADMIUM IODIDE — 366.220

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	79.950	161.084	161.084	−203.342	0.000	−251.369	−203.342	−201.298	35.267
	300.00	80.000	161.579	161.086	−203.194	0.148	−251.668	−203.343	−201.285	35.047
	400.00	82.685	184.961	164.255	−195.060	8.282	−269.044	−219.503	−200.026	26.121
	500.00	85.370	203.700	170.330	−186.657	16.685	−288.507	−262.072	−191.073	19.961
	600.00	88.056	219.502	177.242	−177.986	25.356	−309.687	−266.244	−176.998	15.409
	661.15	89.698	228.127	181.555	−172.551	30.791	−323.377	−264.925	−167.967	13.270
			31.326		20.711					
LIQ	661.15	102.090	259.452	181.555	−151.840	51.502	−323.377	−244.214	−167.967	13.270
	700.00	102.090	265.282	186.041	−147.874	55.468	−333.571	−242.865	−163.525	12.202
	800.00	102.090	278.914	196.817	−137.665	65.677	−360.796	−239.399	−152.427	9.952
	900.00	102.090	290.938	206.620	−127.456	75.886	−389.300	−235.941	−141.764	8.228
	1000.00	102.090	301.694	215.599	−117.247	86.095	−418.941	−232.490	−131.485	6.868

References

Phase	H / S	C_p	Remarks
SOL	Nb1	Pa2,T2	
LIQ	T1	Pa2	Tk1 NBPT= 1017.

CdO — CADMIUM OXIDE — 128.410

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	43.639	54.810	54.810	−258.990	0.000	−275.332	−258.990	−229.306	40.173
	300.00	43.719	55.080	54.811	−258.909	0.081	−275.433	−258.984	−229.122	39.894
	400.00	46.740	68.120	56.568	−254.369	4.621	−281.617	−258.586	−219.223	28.628
	500.00	48.481	78.751	59.975	−249.602	9.388	−288.977	−258.126	−209.436	21.880
	600.00	49.717	87.704	63.870	−244.689	14.301	−297.312	−263.885	−199.677	17.383
	700.00	50.714	95.445	67.840	−239.666	19.324	−306.478	−263.460	−189.009	14.104
	800.00	51.585	102.275	71.726	−234.551	24.439	−316.371	−262.984	−178.405	11.649
	900.00	52.382	108.397	75.466	−229.352	29.638	−326.909	−262.458	−167.863	9.743
	1000.00	53.133	113.955	79.041	−224.076	34.914	−338.031	−261.884	−157.383	8.221
	1100.00	53.854	119.053	82.450	−218.726	40.264	−349.685	−360.296	−141.083	6.699
	1200.00	54.555	123.770	85.699	−213.306	45.684	−361.829	−358.728	−121.223	5.277
	1300.00	55.241	128.163	88.799	−207.816	51.174	−374.428	−357.108	−101.496	4.078
	1400.00	55.917	132.282	91.759	−202.258	56.732	−387.453	−355.436	−81.896	3.056
	1500.00	56.585	136.163	94.591	−196.633	62.357	−400.877	−353.710	−62.417	2.174

References

Phase	H / S	C_p
SOL	Tk1	M4,Tk1

128.410 CADMIUM OXIDE(GAS) **CdO[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	33.892	233.160	233.160	81.069	0.000	11.553	81.069	57.578	−10.087
	300.00	33.943	233.370	233.161	81.132	0.063	11.121	81.057	57.433	−10.000
	400.00	35.769	243.420	234.519	84.630	3.561	−12.738	80.413	49.656	−6.484
	500.00	36.671	251.509	237.134	88.256	7.187	−37.498	79.732	42.043	−4.392
	600.00	37.209	258.246	240.107	91.952	10.883	−62.995	72.757	34.640	−3.016
	700.00	37.575	264.011	243.120	95.693	14.623	−89.115	71.899	28.355	−2.116
	800.00	37.850	269.047	246.053	99.464	18.395	−115.773	71.032	22.193	−1.449
	900.00	38.072	273.518	248.861	103.261	22.192	−142.905	70.155	16.141	−0.937
	1000.00	38.260	277.539	251.531	107.078	26.008	−170.462	69.270	10.187	−0.532
	1100.00	38.427	281.194	254.064	110.912	29.843	−198.401	−30.657	10.201	−0.484
	1200.00	38.579	284.544	256.466	114.763	33.693	−226.690	−30.660	13.916	−0.606
	1300.00	38.721	287.638	258.747	118.628	37.558	−255.301	−30.665	17.631	−0.708
	1400.00	38.855	290.512	260.914	122.506	41.437	−284.211	−30.671	21.346	−0.796
	1500.00	38.984	293.197	262.978	126.398	45.329	−313.398	−30.679	25.062	−0.873
	1600.00	39.108	295.717	264.946	130.303	49.234	−342.845	−30.686	28.778	−0.940
	1700.00	39.230	298.092	266.827	134.220	53.151	−372.536	−30.694	32.495	−0.998
	1800.00	39.348	300.338	268.627	138.149	57.080	−402.459	−30.701	36.212	−1.051
	1900.00	39.465	302.468	270.352	142.090	61.020	−432.600	−30.709	39.930	−1.098
	2000.00	39.580	304.495	272.009	146.042	64.973	−462.949	−30.717	43.648	−1.140

References

Phase	H / S	C_p
GAS	Tk1	Tk1,e

230.372 CADMIUM DIALUMINIUM TETRAOXIDE **CdAl2O4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	129.965	125.102	125.102	−1918.828	0.000	−1956.127	−1918.828	−1801.494	315.614
	300.00	130.466	125.907	125.104	−1918.587	0.241	−1956.359	−1918.834	−1800.766	313.541
	400.00	148.919	166.298	130.486	−1904.503	14.325	−1971.022	−1918.361	−1761.446	230.021
	500.00	158.741	200.676	141.177	−1889.079	29.749	−1989.417	−1917.114	−1722.353	179.933
	600.00	165.166	230.219	153.614	−1872.865	45.963	−2010.997	−1921.822	−1683.476	146.560
	700.00	169.987	256.056	166.442	−1856.098	62.730	−2035.337	−1920.269	−1643.873	122.667
	800.00	173.952	279.021	179.105	−1838.896	79.932	−2062.112	−1918.715	−1604.495	104.763
	900.00	177.421	299.713	191.376	−1821.324	97.504	−2091.066	−1917.301	−1565.305	90.848
	1000.00	180.581	318.572	203.166	−1803.422	115.406	−2121.994	−1937.183	−1524.743	79.644
	1100.00	183.540	335.924	214.457	−1785.214	133.614	−2154.730	−2034.351	−1477.708	70.170
	1200.00	186.361	352.015	225.257	−1766.718	152.110	−2189.137	−2031.381	−1427.233	62.126

References

Phase	H / S	C_p
SOL	Ku1	e

CdGa2O4 — CADMIUM DIGALLIUM TETRAOXIDE — 315.855

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	138.503	139.746	139.746	−1356.871	0.000	−1398.536	−1356.871	−1236.418	216.615
	300.00	138.901	140.604	139.748	−1356.614	0.257	−1398.795	−1356.869	−1235.671	215.149
	400.00	153.675	182.846	145.407	−1341.896	14.975	−1415.034	−1367.449	−1191.739	155.625
	500.00	161.686	218.070	156.519	−1326.095	30.776	−1435.130	−1365.938	−1147.974	119.928
	600.00	167.036	248.048	169.338	−1309.645	47.226	−1458.474	−1370.235	−1104.493	96.155
	700.00	171.129	274.116	182.485	−1292.729	64.142	−1484.610	−1368.123	−1060.366	79.125
	800.00	174.552	297.196	195.408	−1275.441	81.430	−1513.198	−1365.793	−1016.557	66.374
	900.00	177.585	317.933	207.889	−1257.832	99.039	−1543.971	−1363.279	−973.052	56.474
	1000.00	180.376	336.790	219.851	−1239.932	116.939	−1576.722	−1360.587	−929.836	48.570
	1100.00	183.010	354.106	231.279	−1221.762	135.109	−1611.278	−1456.756	−881.018	41.836
	1200.00	185.536	370.139	242.191	−1203.334	153.537	−1647.500	−1452.818	−828.851	36.079

References

Phase	H / S	C_p
SOL	Tk1/Ku1	e

Cd(OH)2 — CADMIUM HYDROXIDE — 146.426

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	−118.816	95.998	95.998	−560.702	0.000	−589.324	−560.702	−473.753	83.000
	300.00	−118.533	95.264	95.995	−560.922	−0.220	−589.501	−561.077	−473.213	82.394
	400.00	−108.167	62.772	91.495	−572.191	−11.489	−597.300	−580.880	−440.918	57.578
	500.00	−102.717	39.273	83.293	−582.712	−22.010	−602.349	−600.160	−403.689	42.173
	600.00	−99.203	20.876	74.368	−592.797	−32.095	−605.323	−625.426	−362.539	31.562
	700.00	−96.602	5.787	65.616	−602.582	−41.880	−606.633	−644.374	−317.225	23.672
	800.00	−94.488	−6.970	57.319	−612.134	−51.432	−606.557	−663.186	−269.204	17.577
	900.00	−92.657	−17.992	49.550	−621.489	−60.787	−605.297	−681.892	−218.832	12.701
	1000.00	−91.002	−27.667	42.302	−630.671	−69.969	−603.004	−700.510	−166.382	8.691

References

Phase	H / S	C_p
SOL	Nb1	e

188.495 CADMIUM METASILICATE **CdSiO3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	88.579	97.500	97.500	−1189.089	0.000	−1218.159	−1189.089	−1105.357	193.654
	300.00	88.802	98.048	97.501	−1188.925	0.164	−1218.339	−1189.091	−1104.838	192.369
	400.00	98.155	124.981	101.110	−1179.541	9.548	−1229.533	−1188.942	−1076.762	140.611
	500.00	104.776	147.624	108.208	−1169.381	19.708	−1243.193	−1188.428	−1048.771	109.564
	600.00	110.322	167.228	116.447	−1158.620	30.469	−1258.957	−1193.875	−1020.843	88.872
	700.00	115.360	184.617	124.966	−1147.333	41.756	−1276.565	−1192.889	−992.078	74.030
	800.00	120.128	200.334	133.420	−1135.557	53.532	−1295.825	−1191.598	−963.475	62.908
	900.00	124.739	214.751	141.666	−1123.313	65.776	−1316.589	−1189.993	−935.053	54.269
	1000.00	129.252	228.128	149.651	−1110.613	78.476	−1338.740	−1188.066	−906.827	47.368
	1100.00	133.701	240.656	157.361	−1097.465	91.624	−1362.186	−1284.844	−872.929	41.452

References

Phase	H / S	C_p	Remarks
SOL	Nb1	S5,e	Tk1 MPT= 1514.

208.289 CADMIUM TITANIUM TRIOXIDE **CdTiO3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	98.501	105.018	105.018	−1230.560	0.000	−1261.871	−1230.560	−1145.510	200.689
	300.00	98.770	105.629	105.020	−1230.378	0.182	−1262.066	−1230.553	−1144.982	199.359
	400.00	108.580	135.569	109.036	−1219.947	10.613	−1274.174	−1229.824	−1116.552	145.807
	500.00	113.637	160.392	116.898	−1208.813	21.747	−1289.009	−1228.757	−1088.354	113.700
	600.00	116.824	181.411	125.944	−1197.280	33.280	−1306.126	−1233.840	−1060.316	92.309
	700.00	119.128	199.600	135.196	−1185.477	45.083	−1325.197	−1232.763	−1031.481	76.970
	800.00	120.961	215.631	144.268	−1173.470	57.090	−1345.975	−1231.703	−1002.799	65.476
	900.00	122.520	229.970	153.008	−1161.294	69.266	−1368.267	−1230.686	−974.247	56.544
	1000.00	123.909	242.952	161.363	−1148.972	81.588	−1391.923	−1229.721	−945.806	49.404
	1100.00	125.187	254.822	169.328	−1136.516	94.044	−1416.821	−1327.842	−911.579	43.287
			13.617		14.979					
SOL−B	1100.00	127.612	268.440	169.328	−1121.537	109.023	−1416.821	−1312.863	−911.579	43.287
	1200.00	127.612	279.543	178.056	−1108.776	121.784	−1444.228	−1314.915	−875.067	38.091
	1300.00	127.612	289.758	186.261	−1096.015	134.545	−1472.700	−1312.594	−838.508	33.692
	1400.00	127.612	299.215	193.996	−1083.253	147.307	−1502.154	−1310.380	−802.124	29.928
	1500.00	127.612	308.019	201.307	−1070.492	160.068	−1532.521	−1308.277	−765.894	26.671
	1600.00	127.612	316.255	208.237	−1057.731	172.829	−1563.739	−1306.289	−729.800	23.826

References

Phase	H / S	C_p
SOL−A	N1,Ku1	e
SOL−B	N1	e

CdS — CADMIUM SULFIDE — 144.477

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	48.676	64.898	64.898	−149.370	0.000	−168.719	−149.370	−143.718	25.179
	300.00	48.702	65.199	64.899	−149.280	0.090	−168.840	−149.370	−143.683	25.017
	400.00	50.082	79.399	66.826	−144.341	5.029	−176.100	−151.668	−141.691	18.503
	500.00	51.463	90.723	70.510	−139.263	10.107	−184.625	−153.271	−139.033	14.525
	600.00	52.844	100.228	74.691	−134.048	15.322	−194.185	−160.723	−135.996	11.840
	700.00	54.225	108.477	78.941	−128.695	20.675	−204.629	−161.650	−131.799	9.835
	800.00	55.605	115.808	83.100	−123.203	26.167	−215.850	−162.489	−127.478	8.323
	900.00	56.986	122.437	87.108	−117.574	31.796	−227.767	−216.037	−121.901	7.075
	1000.00	58.367	128.513	90.949	−111.806	37.564	−240.319	−215.075	−111.492	5.824
	1100.00	59.748	134.140	94.622	−105.900	43.470	−253.455	−313.018	−95.305	4.526
	1200.00	61.128	139.398	98.137	−99.856	49.514	−267.134	−310.902	−75.606	3.291
	1300.00	62.509	144.346	101.503	−93.675	55.695	−281.324	−308.652	−56.088	2.254

References

Phase	H / S	C_p
SOL	Mi1	Mi1

CdS[g] — CADMIUM SULFIDE (GAS) — 144.477

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	35.813	246.673	246.673	188.280	0.000	114.735	188.280	139.736	−24.481
	300.00	35.832	246.894	246.673	188.346	0.066	114.278	188.256	139.434	−24.278
	400.00	36.503	257.308	248.089	191.968	3.688	89.045	184.640	123.454	−16.121
	500.00	36.815	265.491	250.780	195.635	7.355	62.890	181.628	108.481	−11.333
	600.00	36.987	272.220	253.809	199.326	11.046	35.995	172.651	94.183	−8.199
	700.00	37.091	277.930	256.857	203.031	14.751	8.480	170.075	81.309	−6.067
	800.00	37.160	282.887	259.808	206.743	18.463	−19.566	167.457	68.806	−4.493
	900.00	37.209	287.267	262.620	210.462	22.182	−48.078	111.999	57.788	−3.354
	1000.00	37.245	291.189	265.285	214.185	25.905	−77.005	110.916	51.822	−2.707
	1100.00	37.272	294.740	267.804	217.911	29.631	−106.304	10.792	51.845	−2.462
	1200.00	37.294	297.985	270.185	221.639	33.359	−135.942	10.594	55.586	−2.420
	1300.00	37.311	300.970	272.440	225.369	37.089	−165.892	10.391	59.344	−2.384
	1400.00	37.326	303.736	274.578	229.101	40.821	−196.129	10.186	63.117	−2.355
	1500.00	37.339	306.312	276.609	232.834	44.554	−226.633	9.976	66.905	−2.330
	1600.00	37.350	308.722	278.541	236.569	48.289	−257.386	9.764	70.707	−2.308
	1700.00	37.359	310.986	280.384	240.304	52.024	−288.373	9.548	74.523	−2.290
	1800.00	37.368	313.122	282.144	244.041	55.761	−319.579	9.329	78.351	−2.274
	1900.00	37.376	315.143	283.828	247.778	59.498	−350.993	9.107	82.192	−2.260
	2000.00	37.383	317.060	285.442	251.516	63.236	−382.604	8.882	86.044	−2.247

References

Phase	H / S	C_p
GAS	Pa3	Mi1

208.475 CADMIUM SULFATE **CdSO4**

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	99.620	123.039	123.039	−933.279	0.000	−969.963	−933.279	−822.633	144.122
	300.00	99.763	123.656	123.041	−933.095	0.184	−970.191	−933.293	−821.946	143.114
	400.00	107.504	153.416	127.046	−922.731	10.548	−984.098	−936.110	−784.642	102.464
	500.00	115.244	178.236	134.866	−911.594	21.685	−1000.712	−937.770	−746.596	77.996
	600.00	122.984	199.932	143.937	−899.682	33.597	−1019.641	−944.846	−708.200	61.654
	700.00	130.725	219.471	153.354	−886.997	46.282	−1040.627	−944.950	−668.742	49.902
	800.00	138.465	237.432	162.755	−873.537	59.742	−1063.483	−944.494	−629.309	41.090
	900.00	146.206	254.188	171.993	−859.304	73.975	−1088.073	−996.249	−588.813	34.174
	1000.00	153.946	269.993	181.010	−844.296	88.983	−1114.289	−992.971	−543.712	28.401
	1065.00	158.977	279.844	186.743	−834.126	99.153	−1132.161	−1089.829	−512.051	25.114
			5.854		6.234					
SOL−B	1065.00	158.977	285.698	186.743	−827.892	105.387	−1132.161	−1083.595	−512.051	25.114
	1100.00	161.686	290.882	189.975	−822.281	110.998	−1142.251	−1081.823	−493.297	23.425
	1132.00	164.163	295.554	192.893	−817.067	116.212	−1151.634	−1080.129	−476.200	21.974
			8.834		10.000					
SOL−1	1132.00	164.163	304.388	192.893	−807.067	126.212	−1151.634	−1070.129	−476.200	21.974
	1200.00	164.163	313.964	199.485	−795.904	137.375	−1172.661	−1066.471	−440.631	19.180
	1300.00	164.163	327.105	208.803	−779.488	153.791	−1204.724	−1061.153	−388.693	15.618
	1400.00	164.163	339.270	217.693	−763.071	170.208	−1238.050	−1055.901	−337.163	12.580
	1408.00	164.163	340.206	218.387	−761.758	171.521	−1240.768	−1055.484	−333.057	12.356

References

Phase	H / S	C_p	Remarks	
SOL−A	Nb1	Tk1,e		
SOL−B	Tk1	e		
SOL−1	Tk1	e	Tk1	MPT= 1408.

CdSb CADMIUM ANTIMONY 234.161

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	45.691	94.558	94.558	−25.522	0.000	−53.715	−25.522	−24.699	4.327
	300.00	45.727	94.841	94.559	−25.437	0.085	−53.890	−25.532	−24.694	4.300
	400.00	47.668	108.262	96.376	−20.768	4.754	−64.072	−26.082	−24.331	3.177
	500.00	49.610	119.107	99.871	−15.904	9.618	−75.457	−26.615	−23.831	2.490
	600.00	51.551	128.324	103.863	−10.846	14.676	−87.840	−33.328	−23.163	2.017
	700.00	53.492	136.416	107.947	−5.594	19.928	−101.085	−33.805	−21.430	1.599
	729.00	54.055	138.599	109.123	−4.034	21.488	−105.073	−33.926	−20.915	1.499
			43.963		32.049					
LIQ	729.00	75.312	182.562	109.123	28.015	53.537	−105.073	−1.877	−20.915	1.499
	800.00	75.312	189.561	115.956	33.362	58.884	−118.287	−0.688	−22.825	1.490
	900.00	75.312	198.432	124.637	40.893	66.415	−137.695	0.863	−25.687	1.491

References

Phase	H / S	C_p
SOL	Tk1	Tk1,e
LIQ	Tk1	e

CdSe CADMIUM SELENIDE 191.371

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	49.601	83.262	83.262	−144.766	0.000	−169.590	−144.766	−141.548	24.799
	300.00	49.618	83.568	83.263	−144.674	0.092	−169.745	−144.769	−141.528	24.642
	400.00	50.551	97.970	85.220	−139.666	5.100	−178.854	−145.085	−140.407	18.335
	500.00	51.484	109.351	88.947	−134.564	10.202	−189.239	−151.571	−139.091	14.531
	600.00	52.417	118.820	93.158	−129.369	15.397	−200.661	−158.982	−136.419	11.876
	700.00	53.350	126.970	97.420	−124.081	20.685	−212.960	−160.179	−132.563	9.892
	800.00	54.283	134.155	101.571	−118.699	26.067	−226.023	−161.283	−128.541	8.393
	900.00	55.216	140.603	105.556	−113.224	31.542	−239.766	−162.293	−124.387	7.219
	1000.00	56.149	146.468	109.358	−107.656	37.110	−254.124	−163.210	−120.125	6.275
	1100.00	57.082	151.864	112.980	−101.994	42.772	−269.044	−316.381	−104.941	4.983
	1200.00	58.015	156.871	116.432	−96.239	48.527	−284.484	−314.773	−85.790	3.734
	1300.00	58.948	161.551	119.724	−90.391	54.375	−300.408	−313.059	−66.777	2.683
	1400.00	59.881	165.954	122.871	−84.450	60.316	−316.785	−311.240	−47.899	1.787
	1500.00	60.814	170.117	125.883	−78.415	66.351	−333.590	−309.316	−29.156	1.015
	1537.00	61.160	171.603	126.966	−76.158	68.608	−339.912	−308.577	−22.254	0.756

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	Mi1	Mi1,Tk1	MPT= 1537., L= 43.9 kJ

239.369 CADMIUM SELENITE **CdSeO3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	94.667	142.302	142.302	−575.300	0.000	−617.727	−575.300	−497.938	87.237
	300.00	94.768	142.888	142.304	−575.125	0.175	−617.991	−575.301	−497.458	86.615
	400.00	100.207	170.896	146.086	−565.376	9.924	−633.734	−575.333	−471.503	61.572
	500.00	105.646	193.841	153.407	−555.083	20.217	−652.004	−581.217	−445.463	46.537
	600.00	111.085	213.583	161.828	−544.247	31.053	−672.397	−587.726	−418.215	36.409
	700.00	116.524	231.115	170.496	−532.866	42.434	−694.647	−587.713	−389.959	29.099
	800.00	121.964	247.030	179.082	−520.942	54.358	−718.566	−587.279	−361.733	23.619
	900.00	127.403	261.709	187.458	−508.474	66.826	−744.012	−586.404	−333.587	19.361
	953.00	130.286	269.081	191.793	−501.645	73.655	−758.079	−585.755	−318.717	17.469
			61.465		58.576					
LIQ	953.00	142.674	330.546	191.793	−443.069	132.231	−758.079	−527.179	−318.717	17.469
	1000.00	142.674	337.414	198.477	−436.363	138.937	−773.777	−525.972	−308.466	16.113

References

Phase	H / S	C_p
SOL	Nb1	e
LIQ	Tk1	e

240.011 CADMIUM TELLURIDE **CdTe**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−B	298.15	49.889	92.885	92.885	−101.797	0.000	−129.491	−101.797	−99.290	17.395
	300.00	50.026	93.194	92.886	−101.705	0.092	−129.663	−101.800	−99.274	17.285
	400.00	55.505	108.409	94.923	−96.402	5.395	−139.766	−101.839	−98.421	12.852
	500.00	59.061	121.198	98.934	−90.665	11.132	−151.264	−101.786	−97.572	10.193
	600.00	61.861	132.221	103.584	−84.615	17.182	−163.947	−107.955	−96.670	8.416
	700.00	64.303	141.943	108.383	−78.304	23.493	−177.665	−107.963	−94.788	7.073
	800.00	66.555	150.678	113.133	−71.760	30.037	−192.303	−125.580	−91.026	5.943
	900.00	68.696	158.642	117.753	−64.997	36.800	−207.775	−125.553	−86.706	5.032
	1000.00	70.768	165.987	122.214	−58.023	43.774	−224.011	−125.316	−82.400	4.304
	1100.00	72.796	172.828	126.508	−50.845	50.952	−240.955	−223.910	−72.249	3.431
	1200.00	74.792	179.248	130.638	−43.465	58.332	−258.562	−222.375	−58.527	2.548
	1300.00	76.767	185.312	134.612	−35.887	65.910	−276.793	−220.641	−44.942	1.806
	1364.00	78.023	189.031	137.079	−30.934	70.863	−288.773	−266.433	−35.096	1.344

References

Phase	H / S	C_p	Remarks	
SOL−B	Hu1	Hu1,e	Hu1	MPT= 1364., L= 44.4 kJ

Cd11U — 11–CADMIUM URANIUM — 1474.550

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	313.958	583.250	583.250	–45.606	0.000	–219.502	–45.606	–34.628	6.067
	300.00	314.425	585.193	583.256	–45.025	0.581	–220.583	–45.604	–34.560	6.017
	400.00	332.717	678.419	595.842	–12.575	33.031	–283.943	–45.239	–30.926	4.039
	500.00	344.071	753.956	620.150	21.297	66.903	–355.681	–45.003	–27.384	2.861
	600.00	352.695	817.477	647.883	56.150	101.756	–434.336	–113.497	–23.150	2.015
	700.00	360.029	872.408	676.122	91.794	137.400	–518.891	–114.164	–8.034	0.600
	800.00	366.677	920.923	703.748	128.134	173.740	–608.605	–114.487	7.153	–0.467
	900.00	372.924	964.475	730.339	165.116	210.722	–702.911	–114.571	22.365	–1.298

References

Phase	H / S	C_p
SOL	Ku1	e

CdWO4 — CADMIUM TUNGSTATE — 360.259

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	124.497	154.808	154.808	–1180.185	0.000	–1226.341	–1180.185	–1078.831	189.007
	300.00	124.558	155.578	154.810	–1179.955	0.230	–1226.628	–1180.156	–1078.202	187.732
	400.00	127.863	191.864	159.735	–1167.334	12.851	–1244.079	–1178.599	–1044.452	136.391
	500.00	131.168	220.751	169.145	–1154.382	25.803	–1264.757	–1177.057	–1011.094	105.628
	600.00	134.474	244.958	179.816	–1141.100	39.085	–1288.075	–1181.744	–977.981	85.141
	700.00	137.779	265.935	190.653	–1127.487	52.698	–1313.642	–1180.212	–944.140	70.453
	800.00	141.084	284.549	201.248	–1113.544	66.641	–1341.183	–1178.558	–910.526	59.451
	900.00	144.390	301.357	211.452	–1099.270	80.915	–1370.492	–1176.755	–877.129	50.907
	1000.00	147.695	316.741	221.222	–1084.666	95.519	–1401.407	–1174.779	–843.941	44.083
	1100.00	151.001	330.973	230.561	–1069.731	110.454	–1433.802	–1271.649	–805.081	38.230
	1200.00	154.306	344.254	239.488	–1054.466	125.719	–1467.570	–1268.384	–762.808	33.204
	1300.00	157.611	356.735	248.031	–1038.870	141.315	–1502.626	–1264.903	–720.816	28.963

References

Phase	H / S	C_p
SOL	Ku1/e	e

140.115 CERIUM **Ce**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−C	298.15	26.895	69.454	69.454	0.000	0.000	−20.708	0.000	0.000	0.000
	300.00	26.921	69.621	69.455	0.050	0.050	−20.836	0.000	0.000	0.000
	400.00	28.336	77.559	70.528	2.813	2.813	−28.211	0.000	0.000	0.000
	500.00	29.750	84.034	72.600	5.717	5.717	−36.300	0.000	0.000	0.000
	600.00	31.165	89.583	74.979	8.763	8.763	−44.987	0.000	0.000	0.000
	700.00	32.809	94.511	77.423	11.962	11.962	−54.196	0.000	0.000	0.000
	800.00	34.449	98.999	79.844	15.325	15.325	−63.875	0.000	0.000	0.000
	900.00	36.088	103.152	82.206	18.851	18.851	−73.985	0.000	0.000	0.000
	999.00	37.711	107.001	84.474	22.504	22.504	−84.389	0.000	0.000	0.000
			2.995		2.992					
SOL−D	999.00	37.614	109.996	84.474	25.496	25.496	−84.389	0.000	0.000	0.000
	1000.00	37.614	110.033	84.499	25.534	25.534	−84.499	0.000	0.000	0.000
	1071.00	37.614	112.614	86.279	28.205	28.205	−92.405	0.000	0.000	0.000
			5.098		5.460					
LIQ	1071.00	37.698	117.712	86.279	33.665	33.665	−92.405	0.000	0.000	0.000
	1100.00	37.698	118.719	87.121	34.758	34.758	−95.833	0.000	0.000	0.000
	1200.00	37.698	121.999	89.893	38.528	38.528	−107.871	0.000	0.000	0.000
	1300.00	37.698	125.016	92.480	42.297	42.297	−120.224	0.000	0.000	0.000
	1400.00	37.698	127.810	94.905	46.067	46.067	−132.867	0.000	0.000	0.000
	1500.00	37.698	130.411	97.186	49.837	49.837	−145.779	0.000	0.000	0.000
	1600.00	37.698	132.844	99.340	53.607	53.607	−158.943	0.000	0.000	0.000
	1700.00	37.698	135.129	101.378	57.377	57.377	−172.343	0.000	0.000	0.000
	1800.00	37.698	137.284	103.314	61.146	61.146	−185.965	0.000	0.000	0.000
	1900.00	37.698	139.322	105.156	64.916	64.916	−199.796	0.000	0.000	0.000
	2000.00	37.698	141.256	106.913	68.686	68.686	−213.826	0.000	0.000	0.000
	2100.00	37.698	143.095	108.593	72.456	72.456	−228.044	0.000	0.000	0.000
	2200.00	37.698	144.849	110.201	76.225	76.225	−242.442	0.000	0.000	0.000
	2300.00	37.698	146.525	111.744	79.995	79.995	−257.011	0.000	0.000	0.000
	2400.00	37.698	148.129	113.227	83.765	83.765	−271.745	0.000	0.000	0.000
	2500.00	37.698	149.668	114.654	87.535	87.535	−286.635	0.000	0.000	0.000
	2600.00	37.698	151.147	116.029	91.305	91.305	−301.676	0.000	0.000	0.000
	2700.00	37.698	152.569	117.356	95.074	95.074	−316.863	0.000	0.000	0.000
	2800.00	37.698	153.940	118.639	98.844	98.844	−332.188	0.000	0.000	0.000
	2900.00	37.698	155.263	119.879	102.614	102.614	−347.649	0.000	0.000	0.000
	3000.00	37.698	156.541	121.080	106.384	106.384	−363.240	0.000	0.000	0.000
	3100.00	37.698	157.777	122.244	110.154	110.154	−378.956	0.000	0.000	0.000
	3200.00	37.698	158.974	123.373	113.923	113.923	−394.794	0.000	0.000	0.000
	3300.00	37.698	160.134	124.470	117.693	117.693	−410.749	0.000	0.000	0.000
	3400.00	37.698	161.259	125.535	121.463	121.463	−426.819	0.000	0.000	0.000
	3500.00	37.698	162.352	126.571	125.233	125.233	−443.000	0.000	0.000	0.000
	3600.00	37.698	163.414	127.580	129.002	129.002	−459.289	0.000	0.000	0.000
	3695.00	37.698	164.396	128.514	132.584	132.584	−474.860	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks	
SOL−C	Hu1	Hu1		
SOL−D	Hu1	Hu1		
LIQ	Hu1	Hu1	Hu1	BPT= 3695. / L= 414.2 kJ

Ce[g] CERIUM (GAS) 140.115

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	23.074	191.766	191.766	422.584	0.000	365.409	422.584	386.117	−67.646
	300.00	23.096	191.909	191.766	422.627	0.043	365.054	422.577	385.891	−67.190
	400.00	24.593	198.739	192.688	425.005	2.421	345.509	422.192	373.720	−48.803
	500.00	26.768	204.452	194.482	427.569	4.985	325.343	421.852	361.643	−37.781
	600.00	29.168	209.544	196.575	430.365	7.781	304.639	421.603	349.626	−30.438
	700.00	31.461	214.215	198.766	433.399	10.815	283.448	421.437	337.644	−25.195
	800.00	33.486	218.552	200.971	436.648	14.064	261.807	421.324	325.682	−21.265
	900.00	35.179	222.597	203.152	440.085	17.501	239.747	421.233	313.732	−18.209
	1000.00	36.526	226.376	205.288	443.673	21.089	217.296	418.139	301.796	−15.764
	1100.00	37.545	229.908	207.367	447.379	24.795	194.480	412.621	290.313	−13.786
	1200.00	38.269	233.208	209.385	451.172	28.588	171.322	412.644	279.194	−12.153
	1300.00	38.739	236.291	211.337	455.024	32.440	147.846	412.727	268.070	−10.771
	1400.00	39.004	239.173	213.224	458.913	36.329	124.071	412.846	256.938	−9.586
	1500.00	39.118	241.868	215.044	462.820	40.236	100.017	412.983	245.797	−8.559
	1600.00	39.136	244.394	216.801	466.733	44.149	75.703	413.127	234.646	−7.660
	1700.00	39.093	246.766	218.494	470.646	48.062	51.144	413.269	223.487	−6.867
	1800.00	38.986	248.997	220.128	474.550	51.966	26.354	413.404	212.319	−6.161
	1900.00	38.854	251.102	221.703	478.442	55.858	1.348	413.526	201.145	−5.530
	2000.00	38.718	253.091	223.223	482.321	59.737	−23.862	413.635	189.964	−4.961
	2100.00	38.588	254.977	224.691	486.186	63.602	−49.266	413.730	178.778	−4.447
	2200.00	38.470	256.770	226.108	490.039	67.455	−74.854	413.813	167.588	−3.979
	2300.00	38.365	258.477	227.479	493.880	71.296	−100.617	413.885	156.394	−3.552
	2400.00	38.274	260.108	228.805	497.712	75.128	−126.547	413.947	145.197	−3.160
	2500.00	38.196	261.669	230.088	501.536	78.952	−152.637	414.001	133.998	−2.800
	2600.00	38.127	263.166	231.332	505.352	82.768	−178.879	414.047	122.797	−2.467
	2700.00	38.066	264.603	232.538	509.161	86.577	−205.268	414.087	111.595	−2.159
	2800.00	38.011	265.987	233.708	512.965	90.381	−231.798	414.121	100.391	−1.873
	2900.00	37.958	267.320	234.844	516.764	94.180	−258.464	414.150	89.185	−1.606
	3000.00	37.906	268.606	235.948	520.557	97.973	−285.260	414.173	77.979	−1.358
	3100.00	37.852	269.848	237.022	524.345	101.761	−312.183	414.191	66.773	−1.125
	3200.00	37.793	271.049	238.066	528.127	105.543	−339.228	414.204	55.565	−0.907
	3300.00	37.729	272.210	239.084	531.903	109.319	−366.392	414.210	44.358	−0.702
	3400.00	37.657	273.336	240.074	535.672	113.088	−393.669	414.210	33.150	−0.509
	3500.00	37.576	274.426	241.040	539.434	116.850	−421.058	414.202	21.943	−0.327
	3600.00	37.484	275.484	241.983	543.187	120.603	−448.553	414.185	10.735	−0.156
	3700.00	37.379	276.509	242.902	546.931	124.347	−476.153	0.000	0.000	0.000
	3800.00	37.367	277.506	243.800	550.667	128.083	−503.854	0.000	0.000	0.000
	3900.00	37.367	278.476	244.676	554.404	131.820	−531.654	0.000	0.000	0.000
	4000.00	37.367	279.422	245.533	558.141	135.557	−559.549	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1,e

204.981 CERIUM HEXABORIDE **CeB6**

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	103.307	74.057	74.057	−338.904	0.000	−360.984	−338.904	−329.847	57.788
	300.00	103.923	74.698	74.059	−338.712	0.192	−361.122	−338.888	−329.791	57.422
	400.00	126.631	108.111	78.460	−327.044	11.860	−370.288	−338.171	−326.880	42.686
	500.00	138.741	137.782	87.423	−313.724	25.180	−382.615	−338.139	−324.076	33.856
	600.00	146.681	163.821	98.032	−299.431	39.473	−397.723	−338.775	−321.213	27.964
	700.00	152.651	186.898	109.110	−284.453	54.451	−415.281	−339.926	−318.202	23.745
	800.00	157.571	207.611	120.150	−268.935	69.969	−435.024	−341.470	−314.997	20.567
	900.00	161.881	226.424	130.929	−252.959	85.945	−456.740	−343.313	−311.580	18.084
	1000.00	165.812	243.686	141.353	−236.571	102.333	−480.257	−348.383	−307.941	16.085
	1100.00	169.495	259.664	151.391	−219.804	119.100	−505.434	−356.020	−303.644	14.419
	1200.00	173.010	274.563	161.042	−202.678	136.226	−532.154	−358.197	−298.786	13.006
	1300.00	176.406	288.546	170.317	−185.206	153.698	−560.317	−360.344	−293.748	11.803
	1400.00	179.716	301.741	179.238	−167.400	171.504	−589.837	−362.444	−288.546	10.766
	1500.00	182.962	314.251	187.825	−149.265	189.639	−620.642	−364.484	−283.196	9.862
	1600.00	186.159	326.162	196.102	−130.809	208.095	−652.667	−366.454	−277.713	9.066
	1700.00	189.319	337.542	204.090	−112.035	226.869	−685.857	−368.347	−272.108	8.361
	1800.00	192.450	348.452	211.809	−92.946	245.958	−720.160	−370.155	−266.394	7.731
	1900.00	195.557	358.941	219.278	−73.545	265.359	−755.533	−371.874	−260.582	7.164
	2000.00	198.646	369.050	226.516	−53.835	285.069	−791.936	−373.499	−254.682	6.652
	2100.00	201.719	378.817	233.537	−33.817	305.087	−829.332	−375.028	−248.704	6.186
	2200.00	204.780	388.271	240.357	−13.492	325.412	−867.689	−376.455	−242.654	5.761
	2300.00	207.830	397.441	246.988	7.139	346.043	−906.977	−377.779	−236.542	5.372
	2400.00	210.872	406.351	253.443	28.074	366.978	−947.168	−680.554	−223.962	4.874
	2500.00	213.906	415.021	259.734	49.313	388.217	−988.239	−682.135	−204.904	4.281

References

Phase	H / S	C_p
SOL	Nb1/e	e

CeBr3 CERIUM BROMIDE 379.827

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	100.832	207.108	207.108	−882.824	0.000	−944.573	−882.824	−855.793	149.931
	300.00	100.903	207.732	207.110	−882.637	0.187	−944.957	−882.897	−855.625	148.978
	400.00	104.227	237.236	211.110	−872.374	10.450	−967.268	−927.119	−837.332	109.344
	500.00	107.001	260.798	218.769	−861.810	21.014	−992.208	−924.998	−815.129	85.156
	600.00	109.558	280.534	227.462	−850.980	31.844	−1019.301	−922.792	−793.361	69.068
	700.00	112.014	297.608	236.290	−839.901	42.923	−1048.227	−920.515	−771.968	57.605
	800.00	114.415	312.723	244.917	−828.579	54.245	−1078.758	−918.177	−750.906	49.029
	900.00	116.784	326.336	253.220	−817.019	65.805	−1110.722	−915.780	−730.141	42.376
	1000.00	119.134	338.762	261.161	−805.223	77.601	−1143.985	−916.315	−709.642	37.068
	1005.00	119.251	339.357	261.549	−804.627	78.197	−1145.681	−916.190	−708.609	36.830
			51.624		51.882					
LIQ	1005.00	152.674	390.981	261.549	−752.745	130.079	−1145.681	−864.308	−708.609	36.830
	1100.00	152.674	404.770	273.332	−738.241	144.583	−1183.489	−864.216	−693.998	32.955
	1200.00	152.674	418.055	284.846	−722.974	159.850	−1224.640	−858.388	−678.781	29.547

References

Phase	H / S	C_p
SOL	Pa2	Pa2
LIQ	Dw4,Pa2	Dw4

379.827 CERIUM BROMIDE (GAS) **CeBr3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	80.062	398.368	398.368	−597.057	0.000	−715.830	−597.057	−627.051	109.857
	300.00	80.102	398.863	398.369	−596.909	0.148	−716.568	−597.169	−627.236	109.212
	400.00	81.555	422.127	401.531	−588.819	8.238	−757.670	−643.564	−627.734	81.974
	500.00	82.687	440.448	407.547	−580.606	16.451	−800.830	−643.795	−623.751	65.163
	600.00	83.784	455.621	414.330	−572.282	24.775	−845.655	−644.094	−619.715	53.951
	700.00	84.793	468.614	421.179	−563.852	33.205	−891.882	−644.466	−615.624	45.938
	800.00	85.665	479.995	427.834	−555.328	41.729	−939.324	−644.926	−611.473	39.925
	900.00	86.373	490.128	434.203	−546.725	50.332	−987.840	−645.486	−607.259	35.244
	1000.00	86.913	499.257	440.260	−538.059	58.998	−1037.317	−649.151	−602.974	31.496
	1100.00	87.292	507.560	446.006	−529.348	67.709	−1087.664	−655.323	−598.173	28.405
	1200.00	87.522	515.166	451.457	−520.606	76.451	−1138.805	−656.020	−592.947	25.810
	1300.00	87.623	522.177	456.631	−511.848	85.209	−1190.677	−656.710	−587.663	23.613
	1400.00	87.617	528.671	461.548	−503.085	93.972	−1243.224	−657.404	−582.326	21.727
	1500.00	87.528	534.713	466.226	−494.327	102.730	−1296.396	−658.112	−576.938	20.091
	1600.00	87.381	540.357	470.685	−485.581	111.476	−1350.153	−658.839	−571.503	18.658
	1700.00	87.201	545.650	474.941	−476.852	120.205	−1404.456	−659.592	−566.022	17.392
	1800.00	87.016	550.629	479.009	−468.141	128.916	−1459.272	−660.370	−560.495	16.265
	1900.00	86.853	555.329	482.903	−459.448	137.609	−1514.572	−661.174	−554.925	15.256
	2000.00	86.738	559.780	486.636	−450.769	146.288	−1570.330	−661.999	−549.312	14.347

References

Phase	H / S	C_p
GAS	Pa2	Pa2

164.137 CERIUM DICARBIDE **CeC2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	61.007	84.098	84.098	−63.011	0.000	−88.085	−63.011	−63.954	11.204
	300.00	61.151	84.476	84.100	−62.898	0.113	−88.241	−62.979	−63.960	11.136
	400.00	66.547	102.899	86.575	−56.481	6.530	−97.641	−61.399	−64.532	8.427
	500.00	69.538	118.096	91.405	−49.665	13.346	−108.713	−60.150	−65.468	6.839
	600.00	71.584	130.964	96.953	−42.604	20.407	−121.183	−59.295	−66.618	5.800
	700.00	73.182	142.123	102.626	−35.363	27.648	−134.850	−58.810	−67.882	5.065
	800.00	74.543	151.986	108.192	−27.976	35.035	−149.564	−58.633	−69.194	4.518
	900.00	75.766	160.838	113.558	−20.459	42.552	−165.213	−58.709	−70.512	4.092
	1000.00	76.902	168.880	118.694	−12.825	50.186	−181.705	−61.996	−71.806	3.751
	1100.00	77.982	176.260	123.596	−5.081	57.930	−198.967	−67.853	−72.620	3.448
	1200.00	79.024	183.091	128.273	2.770	65.781	−216.939	−68.264	−73.035	3.179
	1300.00	80.039	189.456	132.737	10.723	73.734	−235.570	−68.663	−73.417	2.950
	1400.00	81.035	195.424	137.004	18.777	81.788	−254.817	−69.037	−73.768	2.752
	1500.00	82.016	201.049	141.088	26.930	89.941	−274.643	−69.373	−74.094	2.580

References

Phase	H / S	C_p
SOL	Nb1	e

Ce2C3 — DICERIUM TRICARBIDE — 316.263

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	103.345	173.636	173.636	−176.565	0.000	−228.335	−176.565	−181.784	31.848
	300.00	103.645	174.276	173.638	−176.374	0.191	−228.656	−176.521	−181.817	31.657
	400.00	114.600	205.794	177.861	−165.392	11.173	−247.709	−174.175	−183.941	24.020
	500.00	120.311	232.036	186.148	−153.621	22.944	−269.639	−172.207	−186.621	19.496
	600.00	123.958	254.314	195.700	−141.396	35.169	−293.985	−170.814	−189.645	16.510
	700.00	126.630	273.632	205.484	−128.861	47.704	−320.404	−170.012	−192.854	14.391
	800.00	128.784	290.686	215.089	−116.087	60.478	−348.636	−169.736	−196.142	12.807
	900.00	130.635	305.964	224.352	−103.114	73.451	−378.482	−169.914	−199.437	11.575
	1000.00	132.298	319.815	233.216	−89.967	86.598	−409.781	−176.490	−202.683	10.587
	1100.00	133.839	332.497	241.673	−76.659	99.906	−442.406	−188.197	−204.969	9.733
	1200.00	135.297	344.206	249.736	−63.202	113.363	−476.248	−189.016	−206.458	8.987
	1300.00	136.695	355.091	257.427	−49.602	126.963	−511.219	−189.830	−207.878	8.353
	1400.00	138.052	365.271	264.770	−35.864	140.701	−547.243	−190.619	−209.237	7.807
	1500.00	139.376	374.841	271.792	−21.992	154.573	−584.253	−191.365	−210.540	7.332

References

Phase	H / S	C_p
SOL	Ku1	e

CeCl3 — CERIUM CHLORIDE — 246.473

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	87.864	150.959	150.959	−1053.531	0.000	−1098.539	−1053.531	−978.048	171.350
	300.00	88.333	151.504	150.960	−1053.368	0.163	−1098.819	−1053.512	−977.580	170.212
	400.00	103.876	179.415	154.660	−1043.629	9.902	−1115.395	−1051.737	−952.504	124.384
	500.00	110.173	203.361	162.071	−1032.886	20.645	−1134.567	−1049.255	−927.975	96.945
	600.00	113.491	223.764	170.697	−1021.690	31.841	−1155.949	−1046.557	−903.971	78.698
	700.00	115.975	241.449	179.569	−1010.215	43.316	−1179.229	−1043.796	−880.424	65.698
	800.00	118.521	257.098	188.300	−998.493	55.038	−1204.171	−1040.994	−857.276	55.974
	900.00	121.553	271.227	196.741	−986.494	67.037	−1230.598	−1038.111	−834.483	48.432
	1000.00	125.298	284.221	204.848	−974.158	79.373	−1258.379	−1038.070	−812.016	42.415
	1080.00	128.892	293.996	211.092	−963.994	89.537	−1281.511	−1040.879	−793.987	38.402
			49.201		53.137					
LIQ	1080.00	159.829	343.197	211.092	−910.857	142.674	−1281.511	−987.742	−793.987	38.402
	1100.00	159.829	346.130	213.521	−907.661	145.870	−1288.404	−986.427	−790.411	37.533
	1200.00	159.829	360.037	225.159	−891.678	161.853	−1323.722	−979.859	−772.881	33.643
	1300.00	159.829	372.830	236.033	−875.695	177.836	−1360.374	−973.306	−755.899	30.372

References

Phase	H / S	C_p
SOL	Nb1	Pa2
LIQ	Pa2	Pa2

246.473 CERIUM CHLORIDE (GAS) **CeCl3**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	78.396	370.711	370.711	−722.995	0.000	−833.523	−722.995	−713.031	124.920
	300.00	78.453	371.197	370.713	−722.850	0.145	−834.209	−722.994	−712.970	124.139
	400.00	80.551	394.086	373.820	−714.889	8.106	−872.523	−722.996	−709.631	92.668
	500.00	82.020	412.222	379.748	−706.758	16.237	−912.869	−723.126	−706.278	73.784
	600.00	83.311	427.293	386.451	−698.490	24.505	−954.866	−723.357	−702.888	61.192
	700.00	84.442	440.222	393.231	−690.101	32.894	−998.257	−723.682	−699.452	52.194
	800.00	85.394	451.562	399.828	−681.608	41.387	−1042.858	−724.109	−695.962	45.442
	900.00	86.158	461.666	406.148	−673.029	49.966	−1088.528	−724.646	−692.413	40.187
	1000.00	86.739	470.776	412.163	−664.382	58.613	−1135.158	−728.294	−688.795	35.979
	1100.00	87.147	479.063	417.874	−655.687	67.308	−1182.656	−734.452	−684.663	32.512
	1200.00	87.400	486.658	423.294	−646.958	76.037	−1230.947	−735.140	−680.106	29.604
	1300.00	87.519	493.659	428.441	−638.211	84.784	−1279.968	−735.822	−675.492	27.142
	1400.00	87.527	500.146	433.334	−629.458	93.537	−1329.662	−736.510	−670.826	25.029
	1500.00	87.449	506.182	437.991	−620.709	102.286	−1379.982	−737.214	−666.110	23.196
	1600.00	87.311	511.822	442.431	−611.970	111.025	−1430.885	−737.939	−661.346	21.591
	1700.00	87.139	517.110	446.670	−603.247	119.748	−1482.335	−738.691	−656.536	20.173
	1800.00	86.961	522.086	450.723	−594.542	128.453	−1534.297	−739.471	−651.681	18.911
	1900.00	86.803	526.783	454.604	−585.855	137.140	−1586.742	−740.279	−646.782	17.781
	2000.00	86.693	531.232	458.325	−577.180	145.815	−1639.645	−741.112	−641.840	16.763

References

Phase	H / S	C_p
GAS	Pa2	Pa2

CeF3 CERIUM FLUORIDE 197.110

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	93.096	115.269	115.269	–1688.913	0.000	–1723.281	–1688.913	–1611.878	282.394
	300.00	93.212	115.845	115.271	–1688.741	0.172	–1723.494	–1688.877	–1611.400	280.570
	400.00	97.526	143.325	118.988	–1679.179	9.734	–1736.508	–1686.898	–1585.871	207.094
	500.00	100.133	165.381	126.134	–1669.289	19.624	–1751.980	–1684.958	–1560.840	163.060
	600.00	102.398	183.838	134.254	–1659.162	29.751	–1769.465	–1683.087	–1536.194	133.738
	700.00	104.799	199.800	142.502	–1648.805	40.108	–1788.665	–1681.253	–1511.857	112.816
	800.00	107.541	213.968	150.566	–1638.191	50.722	–1809.366	–1679.412	–1487.782	97.142
	900.00	110.722	226.814	158.335	–1627.282	61.631	–1831.414	–1677.501	–1463.942	84.965
	1000.00	114.392	238.665	165.782	–1616.030	72.883	–1854.695	–1678.452	–1440.318	75.235
	1100.00	118.583	249.760	172.917	–1604.386	84.527	–1879.122	–1681.592	–1416.466	67.262
	1200.00	123.311	260.277	179.763	–1592.296	96.617	–1904.628	–1678.864	–1392.481	60.613
	1300.00	128.587	270.352	186.346	–1579.706	109.207	–1931.163	–1675.663	–1368.742	54.997
	1400.00	134.418	280.091	192.696	–1566.560	122.353	–1958.687	–1671.931	–1345.269	50.193
	1500.00	140.809	289.580	198.840	–1552.803	136.110	–1987.173	–1667.610	–1322.084	46.039
	1600.00	147.763	298.886	204.803	–1538.380	150.533	–2016.597	–1662.641	–1299.207	42.415
	1700.00	155.282	308.067	210.608	–1523.232	165.681	–2046.946	–1656.965	–1276.662	39.227
	1710.00	156.065	308.980	211.180	–1521.675	167.238	–2050.031	–1656.357	–1274.427	38.929
			32.542		55.647					
LIQ	1710.00	133.888	341.522	211.180	–1466.028	222.885	–2050.031	–1600.710	–1274.427	38.929
	1800.00	133.888	348.390	217.870	–1453.978	234.935	–2081.080	–1597.200	–1257.345	36.487
	1900.00	133.888	355.629	224.932	–1440.590	248.323	–2116.284	–1593.315	–1238.570	34.051
	2000.00	133.888	362.496	231.640	–1427.201	261.712	–2152.193	–1589.445	–1219.999	31.863

References

Phase	H / S	C_p
SOL	Pa2/Nb1	Pa2
LIQ	Pa2	Pa2

197.110

CERIUM FLUORIDE (GAS) **CeF3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	72.571	337.101	337.101	−1248.506	0.000	−1349.013	−1248.506	−1237.610	216.824
	300.00	72.672	337.551	337.103	−1248.372	0.134	−1349.637	−1248.508	−1237.542	215.475
	400.00	76.697	359.062	340.008	−1240.885	7.621	−1384.509	−1248.605	−1233.872	161.127
	500.00	79.344	376.476	345.615	−1233.076	15.430	−1421.314	−1248.745	−1230.174	128.515
	600.00	81.367	391.128	352.012	−1225.036	23.470	−1459.713	−1248.960	−1226.441	106.771
	700.00	82.974	403.796	358.525	−1216.816	31.690	−1499.474	−1249.265	−1222.665	91.236
	800.00	84.249	414.962	364.896	−1208.452	40.054	−1540.422	−1249.673	−1218.839	79.582
	900.00	85.243	424.946	371.023	−1199.976	48.530	−1582.427	−1250.195	−1214.955	70.514
	1000.00	85.990	433.967	376.874	−1191.412	57.094	−1625.380	−1253.834	−1211.003	63.256
	1100.00	86.523	442.190	382.443	−1182.785	65.721	−1669.194	−1259.990	−1206.538	57.294
	1200.00	86.873	449.734	387.741	−1174.114	74.392	−1713.795	−1260.681	−1201.648	52.306
	1300.00	87.068	456.697	392.781	−1165.415	83.091	−1759.121	−1261.373	−1196.700	48.084
	1400.00	87.137	463.152	397.580	−1156.704	91.802	−1805.117	−1262.075	−1191.699	44.463
	1500.00	87.109	469.164	402.154	−1147.991	100.515	−1851.737	−1262.798	−1186.648	41.323
	1600.00	87.012	474.783	406.519	−1139.285	109.221	−1898.937	−1263.546	−1181.547	38.574
	1700.00	86.874	480.054	410.692	−1130.590	117.916	−1946.682	−1264.323	−1176.398	36.146
	1800.00	86.724	485.015	414.684	−1121.910	126.596	−1994.938	−1265.132	−1171.203	33.987
	1900.00	86.591	489.700	418.510	−1113.245	135.261	−2043.675	−1265.971	−1165.962	32.055
	2000.00	86.501	494.139	422.182	−1104.591	143.915	−2092.869	−1266.835	−1160.676	30.314

References

Phase	H / S	C_p
GAS	Pa2	Pa2

142.131

CERIUM DIHYDRIDE **CeH2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	40.884	55.647	55.647	−205.016	0.000	−221.607	−205.016	−161.937	28.371
	300.00	40.920	55.900	55.648	−204.940	0.076	−221.710	−205.043	−161.670	28.149
	400.00	42.844	67.936	57.276	−200.752	4.264	−227.926	−206.524	−146.988	19.195
	500.00	44.769	77.703	60.414	−196.371	8.645	−235.223	−207.970	−131.936	13.783
	600.00	46.693	86.035	64.006	−191.798	13.218	−243.420	−209.372	−116.597	10.151
	700.00	48.618	93.378	67.687	−187.033	17.983	−252.397	−210.743	−101.025	7.539
	800.00	50.543	99.995	71.319	−182.075	22.941	−262.071	−212.101	−85.259	5.567
	900.00	52.467	106.059	74.846	−176.924	28.092	−272.378	−213.452	−69.322	4.023
	1000.00	54.392	111.687	78.252	−171.581	33.435	−283.268	−217.795	−53.232	2.781
	1100.00	56.317	116.961	81.534	−166.046	38.970	−294.703	−224.522	−36.566	1.736
	1200.00	58.241	121.944	84.696	−160.318	44.698	−306.651	−225.643	−19.428	0.846

References

Phase	H / S	C_p
SOL	Nb1/B2	B2,Ku1

CeI3 CERIUM IODIDE 520.828

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	100.419	227.191	227.191	−649.775	0.000	−717.512	−649.775	−644.863	112.977
	300.00	100.487	227.813	227.193	−649.589	0.186	−717.933	−649.790	−644.832	112.275
	400.00	103.816	257.191	231.176	−639.369	10.406	−742.245	−674.791	−642.206	83.863
	500.00	106.775	280.679	238.804	−628.838	20.937	−769.177	−739.455	−627.841	65.590
	600.00	109.589	300.396	247.469	−618.019	31.756	−798.257	−737.308	−605.718	52.732
	700.00	112.334	317.496	256.278	−606.922	42.853	−829.170	−735.055	−583.963	43.576
	800.00	115.042	332.673	264.896	−595.553	54.222	−861.692	−732.707	−562.538	36.730
	900.00	117.730	346.379	273.200	−583.915	65.860	−895.655	−730.265	−541.412	31.423
	1000.00	120.404	358.921	281.154	−572.008	77.767	−930.929	−730.722	−520.561	27.191
	1033.00	121.284	362.845	283.701	−568.020	81.755	−942.838	−729.853	−513.639	25.973
			50.225		51.882					
LIQ	1033.00	152.716	413.069	283.701	−516.138	133.637	−942.838	−677.971	−513.639	25.973
	1100.00	152.716	422.666	291.876	−505.906	143.869	−970.839	−679.536	−502.957	23.883
	1200.00	152.716	435.954	303.337	−490.634	159.141	−1013.780	−673.736	−487.160	21.206
	1300.00	152.716	448.178	314.015	−475.363	174.412	−1057.994	−667.946	−471.847	18.959

References

Phase	H / S	C_p
SOL	Nb1/Pa2	Pa2
LIQ	Dw4	Dw1

520.828

CERIUM IODIDE (GAS) **CeI3[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
GAS	298.15	81.567	427.342	427.342	−371.958	0.000	−499.370	−371.958	−426.721	74.760
	300.00	81.594	427.847	427.343	−371.807	0.151	−500.161	−372.008	−427.060	74.358
	400.00	82.457	451.453	430.556	−363.599	8.359	−544.181	−399.021	−444.141	57.999
	500.00	83.253	469.935	436.650	−355.315	16.643	−590.283	−465.932	−448.947	46.901
	600.00	84.174	485.194	443.505	−346.945	25.013	−638.061	−466.234	−445.522	38.786
	700.00	85.090	498.239	450.415	−338.481	33.477	−687.248	−466.613	−442.042	32.986
	800.00	85.907	509.656	457.121	−329.930	42.028	−737.655	−467.083	−438.501	28.631
	900.00	86.578	519.815	463.533	−321.304	50.654	−789.138	−467.655	−434.895	25.241
	1000.00	87.085	528.965	469.626	−312.620	59.338	−841.584	−471.334	−431.216	22.524
	1100.00	87.428	537.282	475.404	−303.893	68.065	−894.903	−477.523	−427.021	20.278
	1200.00	87.618	544.898	480.883	−295.139	76.819	−949.017	−478.241	−422.398	18.387
	1300.00	87.673	551.915	486.080	−286.374	85.584	−1003.863	−478.957	−417.715	16.784
	1400.00	87.655	558.412	491.018	−277.606	94.352	−1059.383	−479.680	−412.977	15.408
	1500.00	87.570	564.457	495.715	−268.845	103.113	−1115.530	−480.419	−408.187	14.214
	1600.00	87.439	570.104	500.189	−260.094	111.864	−1172.261	−481.177	−403.347	13.168
	1700.00	87.278	575.401	504.459	−251.358	120.600	−1229.539	−481.959	−398.459	12.243
	1800.00	87.102	580.384	508.540	−242.639	129.319	−1287.331	−482.767	−393.524	11.420
	1900.00	86.919	585.089	512.447	−233.938	138.020	−1345.607	−483.601	−388.544	10.682
	2000.00	86.734	589.543	516.191	−225.255	146.703	−1404.340	−484.463	−383.518	10.016

References

Phase	H / S	C_p
GAS	Pa2	Pa2

164.420

CERIUM MAGNESIUM **CeMg**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL	298.15	52.269	105.428	105.428	−16.180	0.000	−47.613	−16.180	−17.163	3.007
	300.00	52.317	105.752	105.429	−16.083	0.097	−47.809	−16.179	−17.169	2.989
	400.00	54.902	121.157	107.512	−10.722	5.458	−59.185	−16.132	−17.506	2.286
	500.00	57.488	133.685	111.531	−5.103	11.077	−71.946	−16.086	−17.855	1.865
	600.00	60.074	144.395	116.136	0.775	16.955	−85.862	−16.040	−18.213	1.586
	700.00	62.660	153.850	120.861	6.912	23.092	−100.783	−16.007	−18.578	1.386
	800.00	65.245	162.386	125.527	13.307	29.487	−116.601	−15.997	−18.947	1.237
	900.00	67.831	170.220	130.063	19.961	36.141	−133.237	−16.010	−19.315	1.121
	984.00	70.003	176.368	133.756	25.750	41.930	−147.796	−24.994	−19.020	1.010

References

Phase	H / S	C_p	Remarks	
SOL	Hu1/O1,e	e	Hu1	DPT= 984.

CeN CERIUM NITRIDE 154.122

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		J / (K mol)			kJ / mol					
SOL	298.15	40.358	44.350	44.350	−331.000	0.000	−344.223	−331.000	−294.951	51.674
	300.00	40.471	44.600	44.351	−330.925	0.075	−344.305	−331.002	−294.727	51.317
	400.00	44.680	56.892	45.998	−326.643	4.357	−349.399	−330.941	−282.638	36.909
	500.00	46.999	67.131	49.231	−322.050	8.950	−355.615	−330.722	−270.586	28.268
	600.00	48.574	75.847	52.958	−317.267	13.733	−362.775	−330.477	−258.582	22.512
	700.00	49.798	83.430	56.782	−312.346	18.654	−370.747	−330.276	−246.616	18.403
	800.00	50.834	90.148	60.540	−307.314	23.686	−379.432	−330.161	−234.674	15.323
	900.00	51.762	96.190	64.171	−302.183	28.817	−388.754	−330.146	−222.740	12.927
	1000.00	52.622	101.689	67.652	−296.963	34.037	−398.652	−333.229	−210.799	11.011
	1100.00	53.438	106.743	70.979	−291.660	39.340	−409.077	−338.798	−198.402	9.421
	1200.00	54.224	111.427	74.157	−286.277	44.723	−419.989	−338.859	−185.636	8.081
	1300.00	54.989	115.797	77.194	−280.816	50.184	−431.352	−338.865	−172.867	6.946
	1400.00	55.738	119.900	80.099	−275.279	55.721	−443.139	−338.815	−160.099	5.973
	1500.00	56.476	123.770	82.883	−269.669	61.331	−455.324	−338.708	−147.337	5.131
	1600.00	57.205	127.439	85.554	−263.985	67.015	−467.886	−338.543	−134.584	4.394
	1700.00	57.928	130.928	88.121	−258.228	72.772	−480.806	−338.319	−121.843	3.744
	1800.00	58.645	134.260	90.593	−252.399	78.601	−494.067	−338.035	−109.117	3.167
	1900.00	59.359	137.450	92.975	−246.499	84.501	−507.653	−337.689	−96.409	2.650
	2000.00	60.069	140.513	95.276	−240.527	90.473	−521.552	−337.282	−83.720	2.187

References

Phase	H / S	C_p
SOL	Nb1/e	e

172.114

CERIUM DIOXIDE **CeO2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	61.634	62.300	62.300	−1088.677	0.000	−1107.252	−1088.677	−1025.379	179.642
	300.00	61.789	62.682	62.301	−1088.563	0.114	−1107.367	−1088.667	−1024.987	178.466
	400.00	67.582	81.351	64.807	−1082.060	6.617	−1114.600	−1087.898	−1003.866	131.091
	500.00	70.761	96.801	69.706	−1075.130	13.547	−1123.530	−1086.931	−982.968	102.690
	600.00	72.911	109.902	75.342	−1067.941	20.736	−1133.882	−1085.947	−962.268	83.773
	700.00	74.576	121.271	81.109	−1060.564	28.113	−1145.453	−1085.024	−941.729	70.273
	800.00	75.982	131.323	86.769	−1053.034	35.643	−1158.092	−1084.194	−921.316	60.156
	900.00	77.237	140.346	92.229	−1045.372	43.305	−1171.683	−1083.464	−901.002	52.293
	1000.00	78.399	148.544	97.457	−1037.590	51.087	−1186.134	−1085.827	−880.760	46.006
	1100.00	79.500	156.069	102.448	−1029.694	58.983	−1201.370	−1090.664	−860.135	40.844
	1200.00	80.559	163.032	107.210	−1021.691	66.986	−1217.329	−1089.980	−839.207	36.530
	1300.00	81.589	169.521	111.756	−1013.584	75.093	−1233.960	−1089.225	−818.340	32.881
	1400.00	82.598	175.604	116.102	−1005.374	83.303	−1251.220	−1088.399	−797.533	29.756
	1500.00	83.591	181.337	120.262	−997.065	91.612	−1269.070	−1087.500	−776.788	27.050
	1600.00	84.572	186.763	124.250	−988.656	100.021	−1287.477	−1086.529	−756.105	24.684
	1700.00	85.544	191.919	128.080	−980.150	108.527	−1306.413	−1085.484	−735.485	22.599
	1800.00	86.508	196.836	131.764	−971.548	117.129	−1325.853	−1084.368	−714.928	20.747
	1900.00	87.467	201.539	135.314	−962.849	125.828	−1345.773	−1083.178	−694.436	19.091
	2000.00	88.421	206.050	138.739	−954.055	134.622	−1366.154	−1081.916	−674.008	17.603

References

Phase	H / S	C_p	Remarks
SOL	Nb1	Pa1	Ku1 MPT 2873.

328.228

CERIUM OXIDE **Ce2O3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	117.525	150.582	150.582	−1796.191	0.000	−1841.087	−1796.191	−1707.925	299.221
	300.00	117.800	151.310	150.584	−1795.973	0.218	−1841.366	−1796.154	−1707.377	297.281
	400.00	128.176	186.794	155.352	−1783.614	12.577	−1858.332	−1793.778	−1678.125	219.141
	500.00	134.027	216.072	164.655	−1770.482	25.709	−1878.519	−1791.043	−1649.525	172.325
	600.00	138.096	240.886	175.345	−1756.867	39.324	−1901.398	−1788.258	−1621.484	141.163
	700.00	141.325	262.423	186.280	−1742.891	53.300	−1926.587	−1785.562	−1593.903	118.939
	800.00	144.105	281.480	197.012	−1728.616	67.575	−1953.800	−1783.019	−1566.699	102.295
	900.00	146.625	298.600	207.364	−1714.078	82.113	−1982.819	−1780.642	−1539.803	89.368
	1000.00	148.983	314.172	217.278	−1699.297	96.894	−2013.469	−1784.419	−1513.157	79.039
	1100.00	151.235	328.478	226.745	−1684.285	111.906	−2045.611	−1793.119	−1485.842	70.557
	1200.00	153.415	341.731	235.782	−1669.052	127.139	−2079.129	−1790.749	−1458.011	63.466

References

Phase	H / S	C_p
SOL	Nb1	Pa2

CeAlO3 — CERIUM ALUMINIUM TRIOXIDE — 215.095

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	94.538	109.621	109.621	−1753.514	0.000	−1786.197	−1753.514	−1665.313	291.756
	300.00	94.851	110.207	109.623	−1753.339	0.175	−1786.401	−1753.515	−1664.765	289.861
	400.00	106.849	139.325	113.511	−1743.188	10.326	−1798.919	−1753.091	−1635.224	213.538
	500.00	113.930	163.981	121.205	−1732.126	21.388	−1814.117	−1752.162	−1605.859	167.763
	600.00	119.077	185.227	130.146	−1720.465	33.049	−1831.601	−1751.041	−1576.701	137.264
	700.00	123.309	203.909	139.375	−1708.340	45.174	−1851.077	−1749.864	−1547.738	115.494
	800.00	127.055	220.623	148.505	−1695.819	57.695	−1872.318	−1748.714	−1518.942	99.177
	900.00	130.518	235.790	157.373	−1682.939	70.575	−1895.150	−1747.656	−1490.285	86.494
	1000.00	133.804	249.713	165.921	−1669.722	83.792	−1919.435	−1760.260	−1460.977	76.314
	1100.00	136.976	262.615	174.131	−1656.182	97.332	−1945.059	−1764.382	−1430.964	67.951
	1200.00	140.070	274.667	182.013	−1642.329	111.185	−1971.929	−1762.797	−1400.721	60.972
	1300.00	143.108	285.999	189.580	−1628.170	125.344	−1999.968	−1760.957	−1370.621	55.072
	1400.00	146.107	296.714	196.853	−1613.709	139.805	−2029.108	−1758.861	−1340.672	50.021
	1500.00	149.076	306.896	203.853	−1598.949	154.565	−2059.293	−1756.508	−1310.882	45.649
	1600.00	152.022	316.611	210.599	−1583.894	169.620	−2090.472	−1753.898	−1281.258	41.829
	1700.00	154.951	325.916	217.110	−1568.545	184.969	−2122.602	−1751.032	−1251.804	38.463
	1800.00	157.867	334.855	223.405	−1552.904	200.610	−2155.643	−1747.909	−1222.527	35.477

References

Phase	H / S	C_p
SOL	Nb1/e	e

CeCrO3 — CERIUM CHROMIUM TRIOXIDE — 240.109

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	132.737	105.018	105.018	−1540.130	0.000	−1571.441	−1540.130	−1451.938	254.374
	300.00	132.612	105.839	105.021	−1539.885	0.245	−1571.636	−1540.059	−1451.391	252.710
	400.00	129.103	143.384	110.164	−1526.842	13.288	−1584.196	−1536.665	−1422.369	185.742
	500.00	128.838	172.129	119.790	−1513.960	26.170	−1600.025	−1533.878	−1394.127	145.643
	600.00	129.850	195.696	130.534	−1501.033	39.097	−1618.451	−1531.487	−1366.407	118.956
	700.00	131.466	215.829	141.315	−1487.971	52.159	−1639.051	−1529.380	−1339.063	99.922
	800.00	133.403	233.507	151.756	−1474.729	65.401	−1661.535	−1527.483	−1312.007	85.665
	900.00	135.527	249.341	161.734	−1461.284	78.846	−1685.691	−1525.736	−1285.178	74.590
	1000.00	137.767	263.735	171.225	−1447.620	92.510	−1711.355	−1527.093	−1258.535	65.739
	1100.00	140.082	276.974	180.245	−1433.728	106.402	−1738.399	−1530.969	−1231.609	58.484
	1200.00	142.450	289.264	188.824	−1419.602	120.528	−1766.719	−1529.391	−1204.464	52.429

References

Phase	H / S	C_p
SOL	Nb1	e

172.181

CERIUM MONOSULFIDE

CeS

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	49.955	78.241	78.241	−456.474	0.000	−479.801	−456.474	−449.536	78.757
	300.00	50.061	78.550	78.242	−456.381	0.093	−479.947	−456.473	−449.493	78.264
	400.00	54.280	93.589	80.264	−451.144	5.330	−488.579	−458.580	−447.091	58.384
	500.00	56.960	106.005	84.206	−445.575	10.899	−498.577	−459.817	−444.096	46.394
	600.00	59.035	116.580	88.742	−439.772	16.702	−509.719	−460.636	−440.865	38.381
	700.00	60.824	125.817	93.393	−433.777	22.697	−521.849	−461.150	−437.529	32.649
	800.00	62.460	134.047	97.969	−427.612	28.862	−534.849	−461.707	−434.118	28.345
	900.00	64.008	141.494	102.398	−421.288	35.186	−548.632	−515.117	−429.479	24.926
	1000.00	65.501	148.315	106.653	−414.812	41.662	−563.127	−517.159	−420.012	21.939
	1100.00	66.958	154.627	110.731	−408.189	48.285	−578.278	−521.601	−410.197	19.479
	1200.00	68.391	160.514	114.637	−401.421	55.053	−594.038	−520.452	−400.119	17.417
	1300.00	69.806	166.045	118.381	−394.511	61.963	−610.369	−519.166	−390.143	15.676
	1400.00	71.209	171.269	121.974	−387.460	69.014	−627.237	−517.744	−380.271	14.188
	1500.00	72.603	176.230	125.427	−380.270	76.204	−644.614	−516.187	−370.505	12.902
	1600.00	73.989	180.960	128.751	−372.940	83.534	−662.476	−514.495	−360.847	11.780
	1700.00	75.370	185.487	131.956	−365.472	91.002	−680.799	−512.669	−351.299	10.794
	1800.00	76.747	189.834	135.052	−357.866	98.608	−699.567	−510.710	−341.863	9.921
	1900.00	78.120	194.020	138.046	−350.123	106.351	−718.761	−508.617	−332.539	9.142
	2000.00	79.491	198.062	140.946	−342.242	114.232	−738.366	−506.391	−323.328	8.444

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	Mi1,e	Mi1	MPT= 2723.

Ce2S3 — CERIUM SULFIDE — 376.428

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	128.727	180.330	180.330	−1188.256	0.000	−1242.022	−1188.256	−1171.933	205.318
	300.00	128.750	181.127	180.333	−1188.018	0.238	−1242.356	−1188.244	−1171.832	204.034
	400.00	130.022	218.340	185.398	−1175.079	13.177	−1262.415	−1194.575	−1166.161	152.285
	500.00	131.294	247.490	195.005	−1162.013	26.243	−1285.759	−1199.024	−1158.615	121.040
	600.00	132.566	271.540	205.814	−1148.820	39.436	−1311.745	−1202.650	−1150.170	100.131
	700.00	133.838	292.071	216.706	−1135.500	52.756	−1339.950	−1205.657	−1141.185	85.156
	800.00	135.110	310.026	227.272	−1122.053	66.203	−1370.073	−1209.015	−1131.754	73.896
	900.00	136.382	326.013	237.371	−1108.478	79.778	−1401.890	−1371.113	−1118.415	64.911
	1000.00	137.654	340.448	246.968	−1094.777	93.479	−1435.224	−1376.282	−1090.377	56.955
	1100.00	138.926	353.627	256.074	−1080.948	107.308	−1469.937	−1386.428	−1061.528	50.408
	1200.00	140.197	365.770	264.716	−1066.991	121.265	−1505.915	−1385.557	−1032.029	44.923
	1300.00	141.469	377.042	272.928	−1052.908	135.348	−1543.062	−1384.575	−1002.608	40.285
	1400.00	142.741	387.572	280.745	−1038.698	149.558	−1581.299	−1383.481	−973.266	36.313
	1500.00	144.013	397.464	288.200	−1024.360	163.896	−1620.556	−1382.274	−944.006	32.873
	1600.00	145.285	406.799	295.323	−1009.895	178.361	−1660.773	−1380.954	−914.831	29.866
	1700.00	146.557	415.645	302.143	−995.303	192.953	−1701.899	−1379.519	−885.742	27.216
	1800.00	147.829	424.058	308.684	−980.583	207.673	−1743.888	−1377.969	−856.740	24.862
	1900.00	149.101	432.085	314.969	−965.737	222.519	−1786.698	−1376.304	−827.828	22.759
	2000.00	150.373	439.765	321.019	−950.763	237.493	−1830.293	−1374.523	−799.006	20.868
	2100.00	151.645	447.132	326.850	−935.662	252.594	−1874.640	−1372.627	−770.276	19.160
	2160.00	152.408	451.415	330.251	−926.541	261.715	−1901.597	−1371.434	−753.083	18.212

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	Mi1	Mi1	MPT= 2160.

Ce3S4 — TRICERIUM TETRASULFIDE — 548.609

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	179.646	255.224	255.224	−1652.680	0.000	−1728.775	−1652.680	−1628.422	285.293
	300.00	179.720	256.335	255.227	−1652.348	0.332	−1729.248	−1652.665	−1628.271	283.507
	400.00	183.686	308.581	262.324	−1634.177	18.503	−1757.610	−1661.109	−1619.867	211.533
	500.00	187.652	349.995	275.856	−1615.610	37.070	−1790.608	−1666.864	−1608.983	168.089
	600.00	191.619	384.559	291.170	−1596.647	56.033	−1827.382	−1671.341	−1596.954	139.027
	700.00	195.585	414.395	306.690	−1577.287	75.393	−1867.363	−1674.816	−1584.278	118.220
	800.00	199.552	440.771	321.833	−1557.530	95.150	−1910.146	−1678.587	−1571.095	102.582
	900.00	203.518	464.503	336.388	−1537.376	115.304	−1955.429	−1893.840	−1552.802	90.122
	1000.00	207.485	486.152	350.298	−1516.826	135.854	−2002.978	−1900.678	−1515.015	79.136
	1100.00	211.451	506.113	363.567	−1495.879	156.801	−2052.604	−1914.772	−1476.113	70.095
	1200.00	215.417	524.682	376.228	−1474.536	178.144	−2104.154	−1912.132	−1436.349	62.523

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	e	Mi1	MPT= 2323.

568.421

CERIUM SULFATE **Ce2(SO4)3**

Phase	T [K]	C_p [J / (K mol)]	S [J / (K mol)]	−(G−H298)/T [J / (K mol)]	H [kJ / mol]	H−H298 [kJ / mol]	G [kJ / mol]	ΔH_f [kJ / mol]	ΔG_f [kJ / mol]	log K_f [−]
SOL	298.15	281.006	287.441	287.441	−3954.298	0.000	−4039.998	−3954.298	−3602.923	631.217
	300.00	281.374	289.180	287.446	−3953.778	0.520	−4040.532	−3954.330	−3600.743	626.945
	400.00	301.248	372.848	298.720	−3924.647	29.651	−4073.786	−3962.295	−3482.394	454.754
	500.00	321.122	442.205	320.665	−3893.528	60.770	−4114.631	−3967.045	−3361.915	351.217
	600.00	340.996	502.509	346.049	−3860.422	93.876	−4161.928	−3969.716	−3240.595	282.119
	700.00	360.870	556.566	372.325	−3825.329	128.969	−4214.925	−3970.477	−3118.996	232.742
	800.00	380.744	606.051	398.489	−3788.248	166.050	−4273.089	−3970.223	−2997.364	195.708
	900.00	400.618	652.044	424.135	−3749.180	205.118	−4336.019	−4127.261	−2872.364	166.708
	1000.00	420.492	695.282	449.108	−3708.125	246.173	−4403.406	−4125.847	−2733.309	142.773

References

Phase	H / S	C_p
SOL	Nb1/e	e

267.715

CERIUM MONOTELLURIDE (GAS) **CeTe**[g]

Phase	T [K]	C_p [J / (K mol)]	S [J / (K mol)]	−(G−H298)/T [J / (K mol)]	H [kJ / mol]	H−H298 [kJ / mol]	G [kJ / mol]	ΔH_f [kJ / mol]	ΔG_f [kJ / mol]	log K_f [−]
GAS	298.15	36.103	278.680	278.680	289.533	0.000	206.444	289.533	241.910	−42.382
	300.00	36.119	278.904	278.681	289.600	0.067	205.929	289.502	241.614	−42.069
	400.00	36.673	289.382	280.106	293.243	3.710	177.491	287.698	225.915	−29.502
	500.00	36.930	297.596	282.812	296.925	7.392	148.127	285.569	210.709	−22.013
	600.00	37.072	304.343	285.855	300.626	11.093	118.020	283.097	195.963	−17.060
	700.00	37.158	310.064	288.915	304.337	14.804	87.293	280.262	181.660	−13.556
	800.00	37.214	315.030	291.876	308.056	18.523	56.032	259.427	169.669	−11.078
	900.00	37.254	319.415	294.697	311.780	22.247	24.306	255.858	158.662	−9.208
	1000.00	37.283	323.342	297.368	315.507	25.974	−7.835	249.137	148.064	−7.734
	1100.00	37.305	326.897	299.894	319.236	29.703	−40.350	239.877	138.288	−6.567
	1200.00	37.323	330.143	302.281	322.968	33.435	−73.205	236.073	129.221	−5.625
	1300.00	37.337	333.132	304.541	326.701	37.168	−106.370	232.270	120.471	−4.841
	1400.00	37.349	335.899	306.683	330.435	40.902	−139.824	182.030	114.505	−4.272
	1500.00	37.359	338.476	308.718	334.170	44.637	−173.544	179.804	109.759	−3.822
	1600.00	37.367	340.887	310.654	337.907	48.374	−207.513	177.587	105.162	−3.433
	1700.00	37.375	343.153	312.500	341.644	52.111	−241.716	175.375	100.703	−3.094
	1800.00	37.382	345.290	314.263	345.382	55.849	−276.140	173.168	96.374	−2.797
	1900.00	37.388	347.311	315.949	349.120	59.587	−310.770	170.971	92.168	−2.534
	2000.00	37.393	349.229	317.566	352.859	63.326	−345.598	168.786	88.077	−2.300

References

Phase	H / S	C_p
GAS	Mi1	Mi1

Cl[g] CHLORINE (GAS) 35.453

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	21.832	165.181	165.181	121.286	0.000	72.037	121.286	105.298	–18.448
	300.00	21.850	165.316	165.181	121.326	0.040	71.732	121.295	105.199	–18.317
	400.00	22.504	171.705	166.048	123.549	2.263	54.867	121.784	99.760	–13.027
	500.00	22.730	176.757	167.702	125.813	4.527	37.435	122.263	94.199	–9.841
	600.00	22.750	180.905	169.568	128.088	6.802	19.545	122.720	88.542	–7.708
	700.00	22.671	184.407	171.444	130.360	9.074	1.275	123.153	82.811	–6.179
	800.00	22.546	187.426	173.257	132.621	11.335	–17.320	123.562	77.020	–5.029
	900.00	22.402	190.073	174.982	134.868	13.582	–36.198	123.946	71.179	–4.131
	1000.00	22.255	192.426	176.611	137.101	15.815	–55.325	124.309	65.296	–3.411
	1100.00	22.112	194.540	178.146	139.320	18.034	–74.675	124.650	59.379	–2.820
	1200.00	21.978	196.458	179.594	141.524	20.238	–94.226	124.973	53.430	–2.326
	1300.00	21.855	198.213	180.959	143.715	22.429	–113.961	125.278	47.456	–1.907
	1400.00	21.745	199.828	182.250	145.895	24.609	–133.864	125.567	41.459	–1.547
	1500.00	21.647	201.325	183.473	148.065	26.779	–153.923	125.842	35.441	–1.234
	1600.00	21.561	202.719	184.632	150.225	28.939	–174.126	126.104	29.406	–0.960
	1700.00	21.488	204.024	185.735	152.377	31.091	–194.464	126.355	23.355	–0.718
	1800.00	21.425	205.251	186.786	154.523	33.237	–214.928	126.596	17.289	–0.502
	1900.00	21.372	206.407	187.788	156.663	35.377	–235.511	126.827	11.210	–0.308
	2000.00	21.327	207.503	188.747	158.798	37.512	–256.207	127.049	5.119	–0.134
	2100.00	21.289	208.542	189.665	160.928	39.642	–277.010	127.264	–0.983	0.024
	2200.00	21.258	209.532	190.546	163.056	41.770	–297.914	127.471	–7.095	0.168
	2300.00	21.230	210.476	191.392	165.180	43.894	–318.915	127.671	–13.216	0.300
	2400.00	21.206	211.379	192.206	167.302	46.016	–340.008	127.864	–19.345	0.421
	2500.00	21.183	212.244	192.990	169.421	48.135	–361.190	128.051	–25.483	0.532
	2600.00	21.160	213.075	193.747	171.539	50.253	–382.456	128.231	–31.628	0.635
	2700.00	21.136	213.873	194.478	173.653	52.367	–403.803	128.404	–37.780	0.731
	2800.00	21.108	214.641	195.184	175.766	54.480	–425.229	128.570	–43.938	0.820
	2900.00	21.075	215.381	195.868	177.875	56.589	–446.731	128.727	–50.101	0.902
	3000.00	21.037	216.095	196.530	179.980	58.694	–468.305	128.875	–56.270	0.980

References

Phase	H / S	C_p
GAS	Co1	Ja1

70.905

CHLORINE (GAS)

Cl2[g]

Phase	T [K]	C_p [J / (K mol)]	S [J / (K mol)]	−(G−H298)/T [J / (K mol)]	H [kJ / mol]	H−H298 [kJ / mol]	G [kJ / mol]	ΔH_f [kJ / mol]	ΔG_f [kJ / mol]	log K_f [−]
GAS	298.15	33.942	223.117	223.117	0.000	0.000	−66.522	0.000	0.000	0.000
	300.00	33.972	223.327	223.117	0.063	0.063	−66.935	0.000	0.000	0.000
	400.00	35.273	233.292	224.467	3.530	3.530	−89.787	0.000	0.000	0.000
	500.00	36.080	241.257	227.055	7.101	7.101	−113.528	0.000	0.000	0.000
	600.00	36.588	247.883	229.990	10.736	10.736	−137.994	0.000	0.000	0.000
	700.00	36.927	253.550	232.961	14.413	14.413	−163.072	0.000	0.000	0.000
	800.00	37.165	258.498	235.850	18.118	18.118	−188.680	0.000	0.000	0.000
	900.00	37.341	262.886	238.615	21.844	21.844	−214.753	0.000	0.000	0.000
	1000.00	37.479	266.827	241.242	25.585	25.585	−241.242	0.000	0.000	0.000
	1100.00	37.591	270.405	243.733	29.339	29.339	−268.107	0.000	0.000	0.000
	1200.00	37.687	273.680	246.094	33.103	33.103	−295.313	0.000	0.000	0.000
	1300.00	37.772	276.700	248.334	36.876	36.876	−322.834	0.000	0.000	0.000
	1400.00	37.850	279.502	250.461	40.657	40.657	−350.646	0.000	0.000	0.000
	1500.00	37.924	282.116	252.486	44.445	44.445	−378.728	0.000	0.000	0.000
	1600.00	37.996	284.566	254.415	48.241	48.241	−407.064	0.000	0.000	0.000
	1700.00	38.067	286.871	256.257	52.045	52.045	−435.637	0.000	0.000	0.000
	1800.00	38.139	289.049	258.019	55.855	55.855	−464.434	0.000	0.000	0.000
	1900.00	38.212	291.113	259.707	59.672	59.672	−493.443	0.000	0.000	0.000
	2000.00	38.286	293.075	261.327	63.497	63.497	−522.653	0.000	0.000	0.000
	2100.00	38.363	294.945	262.883	67.330	67.330	−552.055	0.000	0.000	0.000
	2200.00	38.442	296.731	264.381	71.170	71.170	−581.639	0.000	0.000	0.000
	2300.00	38.524	298.442	265.825	75.018	75.018	−611.399	0.000	0.000	0.000
	2400.00	38.610	300.083	267.219	78.875	78.875	−641.325	0.000	0.000	0.000
	2500.00	38.698	301.661	268.565	82.740	82.740	−671.413	0.000	0.000	0.000
	2600.00	38.790	303.181	269.868	86.615	86.615	−701.656	0.000	0.000	0.000
	2700.00	38.886	304.647	271.129	90.499	90.499	−732.047	0.000	0.000	0.000
	2800.00	38.986	306.063	272.351	94.392	94.392	−762.583	0.000	0.000	0.000
	2900.00	39.089	307.433	273.537	98.296	98.296	−793.258	0.000	0.000	0.000
	3000.00	39.196	308.759	274.689	102.210	102.210	−824.068	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Co1	Ja1

ClF[g] CHLORINE MONOFLUORIDE (GAS) 54.451

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	32.084	217.937	217.937	−50.292	0.000	−115.270	−50.292	−51.777	9.071
	300.00	32.117	218.135	217.938	−50.233	0.059	−115.673	−50.293	−51.786	9.017
	400.00	33.745	227.608	219.218	−46.936	3.356	−137.979	−50.337	−52.277	6.827
	500.00	34.872	235.268	221.686	−43.501	6.791	−161.135	−50.369	−52.758	5.512
	600.00	35.623	241.697	224.500	−39.974	10.318	−184.992	−50.396	−53.234	4.634
	700.00	36.143	247.230	227.361	−36.384	13.908	−209.445	−50.420	−53.705	4.007
	800.00	36.519	252.082	230.154	−32.750	17.542	−234.415	−50.441	−54.172	3.537
	900.00	36.803	256.400	232.835	−29.083	21.209	−259.843	−50.461	−54.638	3.171
	1000.00	37.026	260.290	235.389	−25.392	24.900	−285.681	−50.480	−55.101	2.878
	1100.00	37.207	263.827	237.816	−21.680	28.612	−311.890	−50.498	−55.562	2.638
	1200.00	37.358	267.071	240.121	−17.951	32.341	−338.437	−50.516	−56.021	2.439
	1300.00	37.487	270.067	242.310	−14.209	36.083	−365.296	−50.533	−56.480	2.269
	1400.00	37.600	272.849	244.394	−10.454	39.838	−392.443	−50.550	−56.936	2.124
	1500.00	37.701	275.447	246.378	−6.689	43.603	−419.859	−50.568	−57.392	1.999
	1600.00	37.792	277.883	248.272	−2.914	47.378	−447.527	−50.586	−57.846	1.888
	1700.00	37.875	280.177	250.082	0.869	51.161	−475.431	−50.605	−58.299	1.791
	1800.00	37.953	282.344	251.815	4.661	54.953	−503.558	−50.625	−58.751	1.705
	1900.00	38.041	284.398	253.476	8.461	58.753	−531.896	−50.646	−59.202	1.628
	2000.00	38.134	286.352	255.071	12.269	62.561	−560.434	−50.666	−59.652	1.558
	2100.00	38.238	288.215	256.605	16.088	66.380	−589.164	−50.684	−60.101	1.495
	2200.00	38.358	289.996	258.083	19.917	70.209	−618.075	−50.700	−60.549	1.438
	2300.00	38.503	291.705	259.508	23.760	74.052	−647.160	−50.711	−60.996	1.385
	2400.00	38.683	293.347	260.884	27.619	77.911	−676.413	−50.714	−61.443	1.337
	2500.00	38.908	294.930	262.214	31.498	81.790	−705.828	−50.705	−61.891	1.293
	2600.00	39.189	296.462	263.502	35.403	85.695	−735.398	−50.680	−62.339	1.252
	2700.00	39.537	297.947	264.751	39.338	89.630	−765.119	−50.632	−62.788	1.215
	2800.00	39.961	299.392	265.962	43.313	93.605	−794.986	−50.553	−63.239	1.180
	2900.00	40.472	300.803	267.139	47.333	97.625	−824.996	−50.437	−63.694	1.147
	3000.00	41.080	302.185	268.285	51.410	101.702	−855.146	−50.275	−64.154	1.117

References

Phase	H / S	C_p
GAS	Ja1	Ja1

92.448

CHLORINE TRIFLUORIDE (GAS) **ClF3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	63.845	281.605	281.605	−158.866	0.000	−242.826	−158.866	−118.870	20.826
	300.00	64.004	282.000	281.606	−158.748	0.118	−243.348	−158.866	−118.622	20.654
	400.00	70.620	301.405	284.207	−151.987	6.879	−272.549	−158.659	−105.229	13.742
	500.00	74.476	317.615	289.313	−144.715	14.151	−303.523	−158.218	−91.920	9.603
	600.00	76.838	331.419	295.210	−137.140	21.726	−335.992	−157.670	−78.710	6.852
	700.00	78.371	343.387	301.256	−129.375	29.491	−369.745	−157.068	−65.597	4.895
	800.00	79.417	353.924	307.194	−121.482	37.384	−404.622	−156.437	−52.573	3.433
	900.00	80.160	363.323	312.918	−113.501	45.365	−440.492	−155.791	−39.629	2.300
	1000.00	80.705	371.799	318.389	−105.457	53.409	−477.255	−155.137	−26.757	1.398
	1100.00	81.117	379.511	323.601	−97.365	61.501	−514.827	−154.482	−13.950	0.662
	1200.00	81.435	386.583	328.559	−89.237	69.629	−553.136	−153.828	−1.204	0.052
	1300.00	81.685	393.112	333.276	−81.080	77.786	−592.125	−153.178	11.489	−0.462
	1400.00	81.885	399.173	337.769	−72.901	85.965	−631.743	−152.534	24.131	−0.900
	1500.00	82.047	404.828	342.054	−64.704	94.162	−671.946	−151.897	36.728	−1.279
	1600.00	82.180	410.128	346.144	−56.493	102.373	−712.697	−151.268	49.282	−1.609
	1700.00	82.291	415.113	350.056	−48.269	110.597	−753.961	−150.648	61.797	−1.899
	1800.00	82.384	419.819	353.802	−40.035	118.831	−795.710	−150.038	74.277	−2.155
	1900.00	82.462	424.276	357.395	−31.793	127.073	−837.917	−149.439	86.722	−2.384
	2000.00	82.528	428.507	360.846	−23.543	135.323	−880.558	−148.851	99.136	−2.589
	2100.00	82.585	432.535	364.165	−15.288	143.578	−923.612	−148.274	111.521	−2.774
	2200.00	82.634	436.378	367.360	−7.026	151.840	−967.059	−147.709	123.879	−2.941
	2300.00	82.677	440.052	370.442	1.239	160.105	−1010.882	−147.156	136.212	−3.093
	2400.00	82.713	443.572	373.416	9.509	168.375	−1055.064	−146.616	148.521	−3.232
	2500.00	82.745	446.949	376.290	17.782	176.648	−1099.591	−146.089	160.807	−3.360
	2600.00	82.773	450.195	379.071	26.058	184.924	−1144.449	−145.575	173.073	−3.477
	2700.00	82.798	453.319	381.763	34.336	193.202	−1189.626	−145.075	185.319	−3.585
	2800.00	82.820	456.331	384.373	42.617	201.483	−1235.110	−144.589	197.547	−3.685
	2900.00	82.838	459.238	386.904	50.900	209.766	−1280.889	−144.117	209.757	−3.778
	3000.00	82.855	462.046	389.363	59.185	218.051	−1326.954	−143.659	221.952	−3.865

References

Phase	H / S	C_p
GAS	Ja1	Ja1

ClO[g] CHLORINE MONOXIDE (GAS) 51.452

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	31.552	226.652	226.652	101.211	0.000	33.635	101.211	97.478	–17.078
	300.00	31.581	226.847	226.653	101.269	0.058	33.215	101.211	97.455	–16.968
	400.00	33.208	236.160	227.911	104.510	3.299	10.046	101.233	96.201	–12.563
	500.00	34.438	243.710	230.339	107.896	6.685	–13.959	101.304	94.936	–9.918
	600.00	35.281	250.069	233.112	111.385	10.174	–38.656	101.395	93.654	–8.153
	700.00	35.872	255.554	235.935	114.944	13.733	–63.943	101.489	92.356	–6.892
	800.00	36.301	260.373	238.695	118.554	17.343	–89.745	101.577	91.046	–5.945
	900.00	36.626	264.669	241.346	122.201	20.990	–116.001	101.659	89.724	–5.207
	1000.00	36.881	268.541	243.875	125.877	24.666	–142.664	101.733	88.394	–4.617
	1100.00	37.087	272.066	246.280	129.576	28.365	–169.697	101.800	87.057	–4.134
	1200.00	37.258	275.301	248.566	133.293	32.082	–197.068	101.861	85.714	–3.731
	1300.00	37.404	278.289	250.739	137.026	35.815	–224.749	101.917	84.366	–3.390
	1400.00	37.532	281.066	252.807	140.773	39.562	–252.719	101.966	83.014	–3.097
	1500.00	37.645	283.659	254.778	144.532	43.321	–280.957	102.010	81.659	–2.844
	1600.00	37.746	286.092	256.660	148.302	47.091	–309.445	102.048	80.301	–2.622
	1700.00	37.839	288.383	258.460	152.081	50.870	–338.170	102.080	78.941	–2.426
	1800.00	37.925	290.548	260.183	155.870	54.659	–367.118	102.105	77.579	–2.251
	1900.00	38.006	292.601	261.835	159.666	58.455	–396.276	102.123	76.216	–2.095
	2000.00	38.082	294.553	263.423	163.471	62.260	–425.635	102.134	74.852	–1.955

References

Phase	H / S	C_p
GAS	Ja1	Ja1

86.905

DICHLORINE MONOXIDE (GAS) **Cl2O**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	47.571	267.965	267.965	87.864	0.000	7.970	87.864	105.075	−18.409
	300.00	47.688	268.260	267.966	87.952	0.088	7.474	87.862	105.182	−18.314
	400.00	51.839	282.631	269.897	92.958	5.094	−20.095	87.915	110.954	−14.489
	500.00	53.800	294.433	273.661	98.250	10.386	−48.966	88.107	116.692	−12.191
	600.00	54.898	304.347	277.971	103.690	15.826	−78.919	88.332	122.388	−10.655
	700.00	55.590	312.865	282.362	109.216	21.352	−109.789	88.554	128.047	−9.555
	800.00	56.064	320.321	286.651	114.800	26.936	−141.456	88.765	133.674	−8.728
	900.00	56.413	326.946	290.767	120.425	32.561	−173.826	88.961	139.276	−8.083
	1000.00	56.683	332.904	294.687	126.080	38.216	−206.823	89.144	144.856	−7.567
	1100.00	56.902	338.317	298.411	131.760	43.896	−240.389	89.315	150.419	−7.143
	1200.00	57.086	343.276	301.946	137.460	49.596	−274.472	89.476	155.967	−6.789
	1300.00	57.245	347.852	305.304	143.176	55.312	−309.031	89.629	161.502	−6.489
	1400.00	57.387	352.099	308.497	148.908	61.044	−344.031	89.773	167.025	−6.232
	1500.00	57.515	356.063	311.537	154.653	66.789	−379.442	89.908	172.538	−6.008
	1600.00	57.633	359.779	314.437	160.411	72.547	−415.236	90.036	178.043	−5.812
	1700.00	57.744	363.276	317.208	166.180	78.316	−451.390	90.156	183.539	−5.639
	1800.00	57.848	366.580	319.860	171.959	84.095	−487.884	90.268	189.029	−5.485
	1900.00	57.948	369.710	322.402	177.749	89.885	−524.700	90.370	194.513	−5.348
	2000.00	58.044	372.685	324.843	183.549	95.685	−561.821	90.464	199.992	−5.223

References

Phase	H / S	C_p
GAS	Ja1	Ja1

Co COBALT 58.933

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	24.811	30.041	30.041	0.000	0.000	−8.957	0.000	0.000	0.000
	300.00	24.833	30.195	30.042	0.046	0.046	−9.012	0.000	0.000	0.000
	400.00	26.526	37.559	31.034	2.610	2.610	−12.414	0.000	0.000	0.000
	500.00	28.200	43.663	32.966	5.348	5.348	−16.483	0.000	0.000	0.000
	600.00	29.664	48.936	35.198	8.243	8.243	−21.119	0.000	0.000	0.000
	700.00	31.045	53.613	37.500	11.278	11.278	−26.250	0.000	0.000	0.000
			0.646		0.452					
SOL−B	700.00	30.589	54.258	37.500	11.730	11.730	−26.250	0.000	0.000	0.000
	800.00	32.389	58.450	39.860	14.871	14.871	−31.888	0.000	0.000	0.000
	900.00	34.601	62.391	42.147	18.220	18.220	−37.932	0.000	0.000	0.000
	1000.00	36.940	66.156	44.361	21.795	21.795	−44.361	0.000	0.000	0.000
	1100.00	39.723	69.802	46.508	25.623	25.623	−51.159	0.000	0.000	0.000
	1200.00	43.423	73.408	48.600	29.770	29.770	−58.320	0.000	0.000	0.000
	1300.00	48.525	77.075	50.648	34.354	34.354	−65.843	0.000	0.000	0.000
	1400.00	44.228	80.888	52.672	39.504	39.504	−73.740	0.000	0.000	0.000
	1500.00	40.039	83.774	54.652	43.683	43.683	−81.978	0.000	0.000	0.000
	1600.00	38.777	86.311	56.552	47.614	47.614	−90.484	0.000	0.000	0.000
	1700.00	38.128	88.640	58.372	51.456	51.456	−99.233	0.000	0.000	0.000
	1768.00	38.156	90.134	59.565	54.046	54.046	−105.312	0.000	0.000	0.000
			9.158		16.192					
LIQ	1768.00	40.501	99.293	59.565	70.238	70.238	−105.312	0.000	0.000	0.000
	1800.00	40.501	100.019	60.278	71.534	71.534	−108.501	0.000	0.000	0.000
	1900.00	40.501	102.209	62.428	75.584	75.584	−118.613	0.000	0.000	0.000
	2000.00	40.501	104.286	64.469	79.634	79.634	−128.939	0.000	0.000	0.000
	2100.00	40.501	106.262	66.413	83.684	83.684	−139.467	0.000	0.000	0.000
	2200.00	40.501	108.146	68.267	87.734	87.734	−150.188	0.000	0.000	0.000
	2300.00	40.501	109.947	70.041	91.784	91.784	−161.093	0.000	0.000	0.000
	2400.00	40.501	111.671	71.740	95.834	95.834	−172.175	0.000	0.000	0.000
	2500.00	40.501	113.324	73.370	99.885	99.885	−183.425	0.000	0.000	0.000
	2600.00	40.501	114.912	74.938	103.935	103.935	−194.838	0.000	0.000	0.000
	2700.00	40.501	116.441	76.447	107.985	107.985	−206.406	0.000	0.000	0.000
	2800.00	40.501	117.914	77.901	112.035	112.035	−218.124	0.000	0.000	0.000
	2900.00	40.501	119.335	79.306	116.085	116.085	−229.987	0.000	0.000	0.000
	3000.00	40.501	120.708	80.663	120.135	120.135	−241.989	0.000	0.000	0.000
	3100.00	40.501	122.036	81.976	124.185	124.185	−254.127	0.000	0.000	0.000
	3198.00	40.501	123.297	83.223	128.154	128.154	−266.148	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks	
SOL−A	Hu1	Hu1		
SOL−B	Hu1	Hu1	Hu1	CURIE−PT= 1394.
LIQ	Hu1	Hu1	Hu1	BPT= 3198., L= 376.6 kJ

58.933

COBALT (GAS)

Co[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	23.036	179.515	179.515	428.442	0.000	374.920	428.442	383.876	−67.254
	300.00	23.063	179.658	179.516	428.485	0.043	374.587	428.439	383.600	−66.791
	400.00	24.525	186.501	180.439	430.867	2.425	356.267	428.257	368.680	−48.145
	500.00	25.434	192.082	182.226	433.370	4.928	337.329	428.021	353.812	−36.962
	600.00	25.890	196.764	184.270	435.939	7.497	317.880	427.696	338.999	−29.512
	700.00	26.106	200.773	186.348	438.540	10.098	297.998	427.261	324.249	−24.196
	800.00	26.212	204.267	188.374	441.156	12.714	277.742	426.285	309.631	−20.217
	900.00	26.277	207.358	190.315	443.781	15.339	257.158	425.561	295.090	−17.127
	1000.00	26.335	210.130	192.161	446.411	17.969	236.281	424.616	280.642	−14.659
	1100.00	26.401	212.643	193.910	449.048	20.606	215.141	423.425	266.300	−12.646
	1200.00	26.477	214.943	195.568	451.692	23.250	193.760	421.922	252.080	−10.973
	1300.00	26.558	217.066	197.141	454.344	25.902	172.158	419.990	238.001	−9.563
	1400.00	26.636	219.037	198.636	457.003	28.561	150.352	417.500	224.092	−8.361
	1500.00	26.698	220.877	200.058	459.670	31.228	128.355	415.987	210.333	−7.324
	1600.00	26.731	222.601	201.414	462.342	33.900	106.180	414.728	196.664	−6.420
	1700.00	26.719	224.222	202.708	465.015	36.573	83.838	413.559	183.071	−5.625
	1800.00	26.714	225.749	203.946	467.687	39.245	61.339	396.153	169.840	−4.929
	1900.00	26.696	227.193	205.132	470.357	41.915	38.691	394.774	157.304	−4.325
	2000.00	26.665	228.561	206.269	473.026	44.584	15.903	393.392	144.842	−3.783
	2100.00	26.625	229.861	207.362	475.690	47.248	−7.019	392.006	132.448	−3.294
	2200.00	26.579	231.099	208.413	478.350	49.908	−30.067	390.616	120.121	−2.852
	2300.00	26.528	232.279	209.425	481.006	52.564	−53.236	389.221	107.857	−2.450
	2400.00	26.475	233.407	210.401	483.656	55.214	−76.521	387.821	95.654	−2.082
	2500.00	26.424	234.487	211.343	486.301	57.859	−99.916	386.416	83.509	−1.745
	2600.00	26.375	235.522	212.254	488.941	60.499	−123.417	385.006	71.420	−1.435
	2700.00	26.331	236.517	213.134	491.576	63.134	−147.019	383.591	59.386	−1.149
	2800.00	26.293	237.474	213.986	494.207	65.765	−170.719	382.172	47.405	−0.884
	2900.00	26.263	238.396	214.812	496.835	68.393	−194.513	380.750	35.474	−0.639
	3000.00	26.243	239.286	215.613	499.460	71.018	−218.397	379.325	23.592	−0.411
	3100.00	26.232	240.146	216.391	502.084	73.642	−242.369	377.898	11.758	−0.198
	3200.00	26.233	240.979	217.146	504.707	76.265	−266.426	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1

$Co_3(AsO_4)_2$ COBALT ARSENATE 454.638

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	264.310	337.021	337.021	–1864.265	0.000	–1964.748	–1864.265	–1671.928	292.915
	300.00	264.891	338.658	337.026	–1863.775	0.490	–1965.373	–1864.222	–1670.734	290.901
	400.00	288.170	418.362	347.736	–1836.015	28.250	–2003.359	–1861.050	–1606.679	209.811
	500.00	303.332	484.381	368.652	–1806.401	57.864	–2048.591	–1857.021	–1543.542	161.253
	600.00	315.298	540.774	392.752	–1775.452	88.813	–2099.916	–1852.638	–1481.254	128.955
	700.00	325.757	590.176	417.498	–1743.390	120.875	–2156.514	–1848.058	–1419.716	105.941
	800.00	335.411	634.312	441.889	–1710.327	153.938	–2217.776	–1844.585	–1358.660	88.711
	818.00	337.092	641.794	446.206	–1704.274	159.991	–2229.262	–1843.720	–1347.736	86.062

References

Phase	H / S	C_p
SOL	G1	G1

CoB COBALT MONOBORIDE 69.744

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	34.633	30.543	30.543	–94.140	0.000	–103.246	–94.140	–92.551	16.215
	300.00	34.816	30.758	30.544	–94.076	0.064	–103.303	–94.143	–92.542	16.113
	400.00	41.751	41.836	32.007	–90.208	3.932	–106.943	–94.204	–91.996	12.013
	500.00	45.748	51.614	34.972	–85.819	8.321	–111.626	–94.284	–91.437	9.552
	600.00	48.588	60.217	38.477	–81.096	13.044	–117.226	–94.436	–90.854	7.910
	700.00	50.882	67.884	42.141	–76.120	18.020	–123.638	–94.650	–90.241	6.734
	800.00	52.884	74.811	45.798	–70.930	23.210	–130.779	–95.336	–89.532	5.846
	900.00	54.718	81.147	49.379	–65.548	28.592	–138.581	–95.686	–88.786	5.153
	1000.00	56.446	87.003	52.852	–59.989	34.151	–146.992	–96.164	–87.995	4.596
	1100.00	58.106	92.461	56.208	–54.261	39.879	–155.968	–96.794	–87.150	4.138
	1200.00	59.719	97.586	59.444	–48.370	45.770	–165.473	–97.639	–86.237	3.754
	1300.00	61.299	102.429	62.566	–42.319	51.821	–175.476	–98.813	–85.243	3.425

References

Phase	H / S	C_p	Remarks	
SOL	Ku1/e	e	Tk1	MPT= 1733.

128.677

DICOBALT BORIDE **Co2B**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	58.978	59.831	59.831	−125.520	0.000	−143.359	−125.520	−123.707	21.673
	300.00	59.217	60.197	59.832	−125.411	0.109	−143.470	−125.524	−123.696	21.537
	400.00	68.386	78.631	62.284	−118.981	6.539	−150.433	−125.587	−123.073	16.072
	500.00	73.831	94.516	67.180	−111.852	13.668	−159.110	−125.665	−122.438	12.791
	600.00	77.809	108.343	72.913	−104.262	21.258	−169.268	−125.845	−121.777	10.602
	700.00	81.095	120.590	78.866	−96.313	29.207	−180.726	−126.122	−121.078	9.035
	800.00	84.011	131.612	84.782	−88.056	37.464	−193.345	−127.333	−120.210	7.849
	900.00	86.713	141.665	90.552	−79.518	46.002	−207.016	−127.875	−119.290	6.923
	1000.00	89.282	150.935	96.132	−70.717	54.803	−221.652	−128.687	−118.295	6.179
	1100.00	91.764	159.562	101.511	−61.664	63.856	−237.182	−129.819	−117.204	5.566
	1200.00	94.187	167.650	106.689	−52.366	73.154	−253.547	−131.406	−115.991	5.049
	1300.00	96.568	175.284	111.675	−42.828	82.692	−270.697	−133.677	−114.620	4.606
	1400.00	98.918	182.526	116.479	−33.054	92.466	−288.590	−136.891	−113.039	4.218
	1500.00	101.246	189.430	121.114	−23.045	102.475	−307.191	−137.975	−111.291	3.876
	1553.00	102.473	192.967	123.506	−17.647	107.873	−317.325	−138.240	−110.343	3.711

References

Phase	H / S	C_p	Remarks	
SOL	Ku1/e	e	Tk1	MPT= 1553.

218.741

COBALT DIBROMIDE **CoBr2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL-21	298.15	74.312	133.888	133.888	−220.915	0.000	−260.834	−220.915	−206.496	36.177
	300.00	74.350	134.348	133.889	−220.777	0.138	−261.082	−220.963	−206.406	35.938
	400.00	76.400	156.018	136.830	−213.240	7.675	−275.647	−250.472	−195.417	25.519
	500.00	78.450	173.286	142.451	−205.498	15.417	−292.141	−249.160	−181.805	18.993
	600.00	80.500	187.770	148.829	−197.550	23.365	−310.212	−247.825	−168.458	14.666
	648.00	81.484	194.003	151.947	−193.662	27.253	−319.376	−247.169	−162.135	13.070
			0.258		0.167					
SOL−1	648.00	68.199	194.261	151.947	−193.495	27.420	−319.376	−247.002	−162.135	13.070
	700.00	68.199	199.525	155.288	−189.949	30.966	−329.617	−246.995	−155.325	11.590
	800.00	68.199	208.632	161.399	−183.129	37.786	−350.035	−247.516	−142.162	9.282
	900.00	68.199	216.665	167.103	−176.309	44.606	−371.307	−247.802	−128.978	7.486
	951.00	68.199	220.424	169.862	−172.831	48.084	−382.454	−248.038	−122.238	6.714

References

Phase	H / S	C_p	Remarks	
SOL−21	Nb1/e	e		
SOL−1	Tk1	e	Tk1	MPT= 951.

CoCO3 COBALT CARBONATE 118.942

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	80.063	87.864	87.864	−713.000	0.000	−739.197	−713.000	−636.782	111.561
	300.00	80.384	88.360	87.866	−712.852	0.148	−739.360	−712.995	−636.309	110.791
	400.00	93.021	113.396	91.193	−704.119	8.881	−749.477	−712.320	−610.830	79.766
	500.00	100.960	135.056	97.851	−694.397	18.603	−761.925	−711.256	−585.577	61.175
	600.00	107.050	154.020	105.665	−683.987	29.013	−776.399	−710.060	−560.552	48.800
	700.00	112.267	170.921	113.801	−673.016	39.984	−792.661	−708.785	−535.734	39.977
	800.00	117.019	186.227	121.913	−661.549	51.451	−810.530	−707.840	−511.042	33.368

References

Phase	H / S	C_p
SOL	Nb1/Tk1	e

CoCl[g] COBALT MONOCHLORIDE (GAS) 94.386

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	35.124	245.710	245.710	192.882	0.000	119.624	192.882	161.841	−28.354
	300.00	35.151	245.928	245.711	192.947	0.065	119.169	192.870	161.649	−28.146
	400.00	36.124	256.192	247.104	196.517	3.635	94.040	192.142	151.348	−19.764
	500.00	36.600	264.309	249.762	200.156	7.274	68.001	191.257	141.248	−14.756
	600.00	36.879	271.009	252.761	203.831	10.949	41.226	190.220	131.341	−11.434
	700.00	37.067	276.709	255.785	207.529	14.647	13.833	189.044	121.619	−9.075
	800.00	37.205	281.668	258.717	211.243	18.361	−14.092	187.312	112.137	−7.322
	900.00	37.315	286.057	261.516	214.969	22.087	−42.482	185.827	102.827	−5.968
	1000.00	37.407	289.993	264.170	218.705	25.823	−71.288	184.118	93.694	−4.894
	1100.00	37.487	293.562	266.682	222.450	29.568	−100.468	182.158	84.744	−4.024
	1200.00	37.560	296.827	269.060	226.202	33.320	−129.990	179.881	75.986	−3.308
	1300.00	37.627	299.836	271.313	229.962	37.080	−159.825	177.170	67.435	−2.710
	1400.00	37.689	302.627	273.452	233.728	40.846	−189.950	173.896	59.113	−2.206
	1500.00	37.749	305.229	275.484	237.500	44.618	−220.345	171.594	50.997	−1.776
	1600.00	37.807	307.668	277.420	241.277	48.395	−250.991	169.543	43.025	−1.405
	1700.00	37.863	309.961	279.268	245.061	52.179	−281.873	167.583	35.178	−1.081
	1800.00	37.917	312.127	281.034	248.850	55.968	−312.979	149.389	27.739	−0.805
	1900.00	37.970	314.178	282.725	252.644	59.762	−344.295	147.224	21.040	−0.578
	2000.00	38.023	316.127	284.346	256.444	63.562	−375.811	145.061	14.454	−0.378

References

Phase	H / S	C_p
GAS	Ja1	Ja1

129.839

COBALT DICHLORIDE **CoCl2**

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	78.501	109.286	109.286	–312.545	0.000	–345.129	–312.545	–269.650	47.242
	300.00	78.582	109.772	109.288	–312.400	0.145	–345.331	–312.508	–269.384	46.904
	400.00	81.662	132.850	112.413	–304.370	8.175	–357.510	–310.510	–255.310	33.340
	500.00	83.449	151.278	118.405	–296.108	16.437	–371.748	–308.558	–241.737	25.254
	600.00	84.727	166.611	125.197	–287.697	24.848	–387.663	–306.676	–228.551	19.897
	700.00	85.765	179.752	132.074	–279.171	33.374	–404.997	–304.862	–215.674	16.094
	800.00	86.674	191.264	138.768	–270.548	41.997	–423.560	–303.538	–202.991	13.254
	900.00	87.509	201.522	145.181	–261.839	50.706	–443.208	–301.902	–190.523	11.058
	1000.00	88.297	210.783	151.286	–253.048	59.497	–463.831	–300.428	–178.228	9.310
	1013.00	88.398	211.924	152.057	–251.899	60.646	–466.579	–300.249	–176.641	9.108
			44.194		44.769					
LIQ	1013.00	99.161	256.119	152.057	–207.130	105.415	–466.579	–255.480	–176.641	9.108
	1100.00	99.161	264.289	160.615	–198.503	114.042	–489.221	–253.465	–169.955	8.071
	1200.00	99.161	272.917	169.619	–188.587	123.958	–516.088	–251.460	–162.455	7.071
	1300.00	99.161	280.854	177.874	–178.671	133.874	–543.782	–249.901	–155.105	6.232
	1342.00	99.161	284.007	181.147	–174.506	138.039	–555.644	–249.416	–152.050	5.918

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja1	NBPT= 1342., GAS (CoCl2 + Co2Cl4 + CoCl3)

CoCl2[g] COBALT DICHLORIDE (GAS) 129.839

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	59.635	298.429	298.429	–93.722	0.000	–182.698	–93.722	–107.220	18.784
	300.00	59.657	298.798	298.430	–93.612	0.110	–183.251	–93.720	–107.303	18.683
	400.00	60.610	316.099	300.782	–87.595	6.127	–214.035	–93.735	–111.834	14.604
	500.00	61.330	329.703	305.254	–81.497	12.225	–246.349	–93.946	–116.338	12.154
	600.00	61.932	340.940	310.292	–75.333	18.389	–279.897	–94.312	–120.785	10.515
	700.00	62.456	350.527	315.372	–69.113	24.609	–314.482	–94.805	–125.159	9.340
	800.00	62.919	358.898	320.300	–62.844	30.878	–349.962	–95.834	–129.394	8.449
	900.00	63.328	366.333	325.010	–56.531	37.191	–386.231	–96.595	–133.545	7.751
	1000.00	63.687	373.024	329.482	–50.180	43.542	–423.204	–97.560	–137.601	7.188
	1100.00	63.999	379.109	333.721	–43.796	49.926	–460.815	–98.757	–141.549	6.722
	1200.00	64.266	384.689	337.739	–37.382	56.340	–499.009	–100.255	–145.376	6.328
	1300.00	64.487	389.842	341.551	–30.944	62.778	–537.739	–102.174	–149.062	5.989
	1400.00	64.664	394.628	345.174	–24.486	69.236	–576.965	–104.646	–152.579	5.693
	1500.00	64.798	399.094	348.621	–18.012	75.710	–616.654	–106.141	–155.948	5.431
	1600.00	64.887	403.279	351.908	–11.528	82.194	–656.775	–107.383	–159.227	5.198
	1700.00	64.934	407.215	355.047	–5.036	88.686	–697.301	–108.537	–162.432	4.991
	1800.00	64.936	410.926	358.049	1.457	95.179	–738.210	–125.931	–165.276	4.796
	1900.00	64.896	414.436	360.925	7.949	101.671	–779.480	–127.307	–167.424	4.603
	2000.00	64.813	417.763	363.685	14.435	108.157	–821.091	–128.696	–169.500	4.427

References

Phase	H / S	C_p
GAS	Ja1	Ja1

165.291

COBALT TRICHLORIDE (GAS) **CoCl3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	76.280	333.993	333.993	−163.594	0.000	−263.174	−163.594	−154.434	27.056
	300.00	76.415	334.465	333.994	−163.453	0.141	−263.792	−163.593	−154.377	26.879
	400.00	80.998	357.180	337.060	−155.546	8.048	−298.418	−163.451	−151.324	19.761
	500.00	82.891	375.485	342.975	−147.339	16.255	−335.082	−163.339	−148.307	15.494
	600.00	83.750	390.684	349.697	−139.001	24.593	−373.412	−163.348	−145.303	12.650
	700.00	84.144	403.628	356.500	−130.604	32.990	−413.144	−163.502	−142.285	10.617
	800.00	84.307	414.876	363.109	−122.180	41.414	−454.081	−164.229	−139.173	9.087
	900.00	84.355	424.810	369.424	−113.746	49.848	−496.075	−164.732	−136.013	7.894
	1000.00	84.346	433.697	375.414	−105.311	58.283	−539.008	−165.484	−132.784	6.936
	1100.00	84.314	441.735	381.084	−96.878	66.716	−582.786	−166.509	−129.467	6.148
	1200.00	84.279	449.070	386.448	−88.448	75.146	−627.332	−167.873	−126.042	5.486
	1300.00	84.255	455.815	391.528	−80.022	83.572	−672.581	−169.689	−122.486	4.922
	1400.00	84.250	462.058	396.346	−71.597	91.997	−718.478	−172.086	−118.769	4.431
	1500.00	84.270	467.871	400.923	−63.171	100.423	−764.978	−173.522	−114.908	4.001
	1600.00	84.318	473.311	405.279	−54.742	108.852	−812.040	−174.718	−110.961	3.622
	1700.00	84.397	478.425	409.433	−46.306	117.288	−859.629	−175.829	−106.941	3.286
	1800.00	84.510	483.252	413.401	−37.861	125.733	−907.716	−193.178	−102.564	2.976
	1900.00	84.657	487.825	417.199	−29.403	134.191	−956.271	−194.496	−97.494	2.680
	2000.00	84.841	492.172	420.840	−20.929	142.665	−1005.273	−195.809	−92.355	2.412

References

Phase	H / S	C_p
GAS	Ja1	Ja1

Co2Cl4[g] DICOBALT TETRACHLORIDE (GAS) 259.677

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	127.181	450.308	450.308	−350.619	0.000	−484.878	−350.619	−333.920	58.501
	300.00	127.260	451.095	450.310	−350.384	0.235	−485.712	−350.601	−333.817	58.123
	400.00	130.081	488.146	455.343	−337.498	13.121	−532.756	−349.777	−328.355	42.879
	500.00	131.473	517.338	464.926	−324.413	26.206	−583.082	−349.311	−323.061	33.750
	600.00	132.303	541.387	475.724	−311.221	39.398	−636.054	−349.179	−317.828	27.669
	700.00	132.867	561.826	486.601	−297.961	52.658	−691.240	−349.344	−312.594	23.326
	800.00	133.289	579.597	497.139	−284.653	65.966	−748.330	−350.631	−307.193	20.058
	900.00	133.629	595.316	507.191	−271.306	79.313	−807.091	−351.434	−301.720	17.511
	1000.00	133.918	609.411	516.720	−257.928	92.691	−867.339	−352.689	−296.133	15.468
	1100.00	134.174	622.187	525.737	−244.524	106.095	−928.929	−354.446	−290.397	13.790
	1200.00	134.407	633.872	534.268	−231.094	119.525	−991.741	−356.840	−284.475	12.383
	1300.00	134.624	644.639	542.349	−217.643	132.976	−1055.673	−360.102	−278.319	11.183
	1400.00	134.829	654.623	550.017	−204.170	146.449	−1120.642	−364.491	−271.870	10.144
	1500.00	135.025	663.932	557.304	−190.677	159.942	−1186.575	−366.934	−265.163	9.234
	1600.00	135.216	672.652	564.244	−177.165	173.454	−1253.409	−368.876	−258.314	8.433
	1700.00	135.401	680.855	570.864	−163.634	186.985	−1321.088	−370.635	−251.349	7.723
	1800.00	135.582	688.600	577.192	−150.085	200.534	−1389.565	−404.863	−243.696	7.072
	1900.00	135.760	695.935	583.250	−136.518	214.101	−1458.795	−407.031	−234.683	6.452
	2000.00	135.935	702.903	589.060	−122.933	227.686	−1528.740	−409.196	−225.556	5.891

References

Phase	H / S	C_p
GAS	Ja1	Ja1

96.930

COBALT DIFLUORIDE

CoF2

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	68.784	82.006	82.006	−671.532	0.000	−695.982	−671.532	−626.562	109.771
	300.00	68.967	82.432	82.008	−671.405	0.127	−696.134	−671.508	−626.283	109.046
	400.00	75.614	103.308	84.809	−664.132	7.400	−705.455	−670.014	−611.424	79.844
	500.00	79.022	120.581	90.287	−656.385	15.147	−716.676	−668.368	−596.967	62.365
	600.00	81.153	135.190	96.585	−648.369	23.163	−729.483	−666.720	−582.842	50.741
	700.00	82.683	147.820	103.023	−640.174	31.358	−743.648	−665.111	−568.990	42.459
	800.00	83.892	158.942	109.331	−631.843	39.689	−758.997	−663.979	−555.303	36.258
	900.00	84.914	168.883	115.406	−623.402	48.130	−775.397	−662.534	−541.807	31.446
	1000.00	85.820	177.878	121.210	−614.865	56.667	−792.742	−661.252	−528.463	27.604
	1100.00	86.650	186.097	126.741	−606.241	65.291	−810.947	−660.162	−515.239	24.467
	1200.00	87.429	193.670	132.007	−597.536	73.996	−829.940	−659.333	−502.103	21.856
	1300.00	88.172	200.697	137.024	−588.756	82.776	−849.663	−658.883	−489.022	19.649
	1400.00	88.888	207.258	141.809	−579.903	91.629	−870.064	−658.942	−475.956	17.758
			42.014		58.819					
LIQ	1400.00	104.600	249.272	141.809	−521.084	150.448	−870.064	−600.123	−475.956	17.758
	1500.00	104.600	256.488	149.216	−510.624	160.908	−895.356	−597.620	−467.172	16.268
	1600.00	104.600	263.239	156.134	−500.164	171.368	−921.346	−594.881	−458.564	14.971
	1700.00	104.600	269.580	162.623	−489.704	181.828	−947.990	−592.064	−450.130	13.831
	1800.00	104.600	275.559	168.732	−479.244	192.288	−975.250	−605.495	−441.570	12.814
	1900.00	104.600	281.214	174.505	−468.784	202.748	−1003.091	−602.908	−432.533	11.891
	2000.00	104.600	286.580	179.976	−458.324	213.208	−1031.483	−600.330	−423.633	11.064
	2012.00	104.600	287.205	180.613	−457.069	214.463	−1034.926	−600.022	−422.574	10.971

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Pa2		
LIQ	Ja1	Ja1	Ja1	NBPT = 2012.

CoF_2[g] COBALT DIFLUORIDE (GAS) 96.930

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	51.209	278.015	278.015	–356.477	0.000	–439.367	–356.477	–369.947	64.813
	300.00	51.275	278.332	278.016	–356.382	0.095	–439.882	–356.486	–370.031	64.428
	400.00	53.703	293.460	280.062	–351.118	5.359	–468.502	–356.999	–374.471	48.901
	500.00	54.970	305.592	283.995	–345.679	10.798	–498.475	–357.662	–378.765	39.569
	600.00	55.781	315.690	288.460	–340.139	16.338	–529.553	–358.489	–382.911	33.335
	700.00	56.376	324.336	292.982	–334.530	21.947	–561.564	–359.466	–386.906	28.871
	800.00	56.857	331.896	297.384	–328.867	27.610	–594.384	–361.002	–390.690	25.509
	900.00	57.270	338.617	301.599	–323.160	33.317	–627.916	–362.292	–394.326	22.886
	1000.00	57.642	344.670	305.608	–317.415	39.062	–662.085	–363.802	–397.806	20.779
	1100.00	57.987	350.181	309.413	–311.633	44.844	–696.832	–365.554	–401.124	19.048
	1200.00	58.313	355.240	313.024	–305.818	50.659	–732.106	–367.615	–404.269	17.597
	1300.00	58.627	359.920	316.454	–299.971	56.506	–767.867	–370.098	–407.226	16.363
	1400.00	58.931	364.276	319.716	–294.093	62.384	–804.079	–373.132	–409.972	15.296
	1500.00	59.228	368.352	322.824	–288.185	68.292	–840.713	–375.181	–412.529	14.366
	1600.00	59.520	372.184	325.790	–282.247	74.230	–877.742	–376.964	–414.960	13.547
	1700.00	59.807	375.801	328.627	–276.281	80.196	–915.143	–378.641	–417.283	12.822
	1800.00	60.092	379.228	331.344	–270.286	86.191	–952.896	–396.537	–419.215	12.165
	1900.00	60.373	382.484	333.950	–264.263	92.214	–990.983	–398.386	–420.425	11.558
	2000.00	60.653	385.588	336.455	–258.211	98.266	–1029.387	–400.218	–421.537	11.009

References

Phase	H / S	C_p
GAS	Ja1	Ja1

CoF_3 COBALT TRIFLUORIDE 115.928

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	91.801	94.558	94.558	–790.358	0.000	–818.551	–790.358	–718.899	125.948
	300.00	91.932	95.127	94.560	–790.188	0.170	–818.726	–790.321	–718.456	125.094
	400.00	96.713	122.317	98.235	–780.725	9.633	–829.652	–788.242	–694.812	90.733
	500.00	99.188	144.189	105.311	–770.919	19.439	–843.013	–786.219	–671.691	70.171
	600.00	100.756	162.420	113.352	–760.917	29.441	–858.369	–784.321	–648.966	56.498
	700.00	101.895	178.041	121.504	–750.782	39.576	–875.411	–782.547	–626.549	46.754
	800.00	102.805	191.709	129.443	–740.545	49.813	–893.912	–781.313	–604.316	39.458
	900.00	103.582	203.863	137.049	–730.225	60.133	–913.702	–779.813	–582.283	33.795
	1000.00	104.277	214.813	144.287	–719.832	70.526	–934.645	–778.515	–560.407	29.273
	1100.00	104.919	224.782	151.158	–709.372	80.986	–956.632	–777.442	–538.650	25.578
	1200.00	105.523	233.938	157.680	–698.849	91.509	–979.574	–776.660	–516.979	22.504

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Pa2	Ja1	MPT= 1200.(approx.)

312.742

COBALT DIIODIDE — CoI2

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	75.713	153.134	153.134	−88.701	0.000	−134.358	−88.701	−90.774	15.903
	300.00	75.772	153.603	153.136	−88.561	0.140	−134.642	−88.708	−90.786	15.807
	400.00	78.994	175.842	156.146	−80.823	7.878	−151.160	−105.172	−90.860	11.865
	500.00	82.216	193.816	161.938	−72.762	15.939	−169.670	−148.044	−83.163	8.688
	600.00	85.437	209.090	168.554	−64.379	24.322	−189.833	−146.307	−70.347	6.124
	700.00	88.659	222.502	175.322	−55.675	33.026	−211.426	−144.400	−57.836	4.316
	789.00	91.526	233.282	181.260	−47.656	41.045	−231.716	−142.977	−46.886	3.104

References

Phase	H / S	C_p	Remarks
SOL	Nb1/e	e	Tk1 MPT= 789.

190.806

TRICOBALT NITRIDE — Co3N

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	91.932	98.742	98.742	8.368	0.000	−21.072	8.368	34.362	−6.020
	300.00	92.048	99.311	98.744	8.538	0.170	−21.255	8.373	34.524	−6.011
	400.00	98.324	126.652	102.430	18.057	9.689	−32.604	8.741	43.188	−5.640
	500.00	104.600	149.266	109.596	28.203	19.835	−46.430	9.203	51.748	−5.406
	600.00	110.876	168.892	117.877	38.977	30.609	−62.358	9.801	60.204	−5.241

References

Phase	H / S	C_p
SOL	Ku1	e

CoO COBALT MONOXIDE 74.933

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	55.064	52.969	52.969	–237.944	0.000	–253.737	–237.944	–214.198	37.527
	300.00	55.050	53.310	52.970	–237.842	0.102	–253.835	–237.915	–214.051	37.270
	400.00	52.926	68.869	55.107	–232.439	5.505	–259.987	–236.562	–206.312	26.942
	500.00	53.933	80.681	59.081	–227.144	10.800	–267.485	–235.534	–198.871	20.776
	600.00	54.331	90.559	63.528	–221.726	16.218	–276.061	–234.590	–191.629	16.683
	700.00	54.506	98.947	68.004	–216.284	21.660	–285.547	–233.812	–184.533	13.770
	800.00	54.812	106.243	72.338	–210.820	27.124	–295.814	–233.609	–177.475	11.588
	900.00	55.320	112.726	76.472	–205.315	32.629	–306.769	–233.155	–170.488	9.895
	1000.00	56.023	118.589	80.395	–199.749	38.195	–318.339	–232.896	–163.541	8.542
	1100.00	56.898	123.969	84.115	–194.105	43.839	–330.470	–232.833	–156.610	7.437
	1200.00	57.922	128.962	87.646	–188.365	49.579	–343.120	–233.016	–149.675	6.515
	1300.00	59.070	133.643	91.006	–182.516	55.428	–356.252	–233.542	–142.711	5.734
	1400.00	60.325	138.066	94.211	–176.547	61.397	–369.840	–234.530	–135.689	5.063
	1500.00	61.668	142.273	97.276	–170.448	67.496	–383.858	–234.431	–128.630	4.479
	1600.00	63.084	146.298	100.215	–164.211	73.733	–398.288	–233.958	–121.590	3.970
	1700.00	64.562	150.167	103.041	–157.829	80.115	–413.113	–233.264	–114.587	3.521
	1800.00	66.088	153.900	105.763	–151.297	86.647	–428.317	–248.668	–107.337	3.115
	1900.00	67.651	157.515	108.392	–144.611	93.333	–443.889	–247.901	–99.505	2.736
	2000.00	69.243	161.025	110.936	–137.766	100.178	–459.817	–246.988	–91.718	2.395
	2078.00	70.497	163.698	112.867	–132.316	105.628	–472.481	–246.173	–85.678	2.154
			26.175		54.392					
LIQ	2078.00	60.668	189.873	112.867	–77.924	160.020	–472.481	–191.781	–85.678	2.154
	2100.00	60.668	190.512	113.677	–76.590	161.354	–476.666	–191.754	–84.555	2.103
	2200.00	60.668	193.335	117.234	–70.523	167.421	–495.859	–191.642	–79.453	1.886
	2300.00	60.668	196.031	120.602	–64.456	173.488	–515.328	–191.540	–74.356	1.689
	2400.00	60.668	198.613	123.799	–58.389	179.555	–535.062	–191.450	–69.263	1.507
	2500.00	60.668	201.090	126.841	–52.322	185.622	–555.048	–191.371	–64.173	1.341

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	Ja1	Ja1	MPT= 2078.
LIQ	e	e		

240.797

TRICOBALT TETRAOXIDE **Co3O4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL	298.15	123.035	114.307	114.307	−910.020	0.000	−944.101	−910.020	−794.901	139.263
	300.00	123.528	115.069	114.309	−909.792	0.228	−944.313	−910.038	−794.187	138.280
	400.00	142.656	153.545	119.425	−896.372	13.648	−957.790	−910.253	−755.503	98.659
	500.00	152.850	186.558	129.635	−881.559	28.461	−974.838	−909.772	−716.865	74.890
	600.00	162.807	215.244	141.561	−865.810	44.210	−994.956	−909.026	−678.348	59.055
	700.00	173.621	241.140	153.964	−848.997	61.023	−1017.795	−907.829	−639.989	47.757
	800.00	185.280	265.077	166.374	−831.058	78.962	−1043.119	−907.343	−601.653	39.284
	900.00	197.552	287.603	178.604	−811.920	98.100	−1070.764	−905.062	−563.574	32.709
	1000.00	210.290	309.073	190.585	−791.532	118.488	−1100.605	−902.323	−525.773	27.464
	1100.00	223.382	329.728	202.301	−769.851	140.169	−1132.551	−899.143	−488.269	23.186
	1200.00	236.733	349.735	213.758	−746.847	163.173	−1166.529	−895.680	−451.068	19.634
	1220.00	239.427	353.671	216.019	−742.085	167.935	−1173.563	−894.978	−443.664	18.996

References

Phase	H / S	C_p	Remarks
SOL	Ja1	Ja1	Ja1 NDPT= 1220. (CoO + O2)

226.923

COBALT DICHROMIUM TETRAOXIDE **CoCr2O4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL	298.15	157.222	126.357	126.357	−1437.497	0.000	−1475.170	−1437.497	−1329.788	232.973
	300.00	157.448	127.330	126.360	−1437.206	0.291	−1475.405	−1437.447	−1329.120	231.420
	400.00	166.015	173.938	132.656	−1420.984	16.513	−1490.560	−1434.589	−1293.437	168.906
	500.00	170.933	211.551	144.796	−1404.119	33.378	−1509.895	−1431.785	−1258.478	131.472
	600.00	174.415	243.037	158.616	−1386.844	50.653	−1532.667	−1429.226	−1224.061	106.564
	700.00	177.219	270.140	172.657	−1369.259	68.238	−1558.357	−1426.934	−1190.051	88.803
	800.00	179.661	293.967	186.361	−1351.412	86.085	−1586.586	−1425.306	−1156.292	75.498
	900.00	181.894	315.259	199.521	−1333.333	104.164	−1617.066	−1423.513	−1122.776	65.164
	1000.00	183.996	334.533	212.074	−1315.038	122.459	−1649.571	−1422.008	−1089.444	56.907
	1100.00	186.012	352.165	224.019	−1296.537	140.960	−1683.918	−1420.913	−1056.245	50.157
	1200.00	187.971	368.434	235.384	−1277.837	159.660	−1719.958	−1420.369	−1023.122	44.535
	1300.00	189.888	383.556	246.207	−1258.944	178.553	−1757.566	−1420.487	−990.018	39.779
	1400.00	191.776	397.697	256.528	−1239.861	197.636	−1796.637	−1421.368	−956.876	35.701
	1500.00	193.642	410.992	266.387	−1220.590	216.907	−1837.078	−1421.471	−923.693	32.166
	1600.00	195.491	423.549	275.821	−1201.133	236.364	−1878.810	−1421.576	−890.506	29.072
	1700.00	197.328	435.455	284.864	−1181.492	256.005	−1921.766	−1421.816	−857.307	26.342
	1800.00	199.154	446.786	293.547	−1161.668	275.829	−1965.882	−1438.480	−823.796	23.906

References

Phase	H / S	C_p
SOL	K7	e

$CoFe_2O_4$ COBALT DIIRON TETRAOXIDE 234.625

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL−1	298.15	152.843	134.725	134.725	−1087.840	0.000	−1128.008	−1087.840	−980.455	171.772
	300.00	153.185	135.671	134.728	−1087.557	0.283	−1128.258	−1087.804	−979.789	170.596
	400.00	168.227	181.932	140.933	−1071.441	16.399	−1144.213	−1085.446	−944.120	123.289
	500.00	179.828	220.754	153.116	−1054.021	33.819	−1164.398	−1082.587	−909.112	94.974
	600.00	190.075	254.459	167.258	−1035.519	52.321	−1188.195	−1079.475	−874.706	76.150
	700.00	199.682	284.487	181.897	−1016.027	71.813	−1215.168	−1076.186	−840.836	62.744
	783.00	207.390	307.287	193.995	−999.133	88.707	−1239.738	−1073.820	−813.038	54.238
			0.000		0.000					
SOL-11	783.00	209.200	307.287	193.995	−999.133	88.707	−1239.738	−1073.820	−813.038	54.238
	800.00	209.200	311.781	196.451	−995.576	92.264	−1245.001	−1073.234	−807.382	52.717
	900.00	209.200	336.421	210.661	−974.656	113.184	−1277.435	−1070.538	−774.327	44.941
	1000.00	209.200	358.462	224.358	−953.736	134.104	−1312.198	−1069.669	−741.483	38.731
	1100.00	209.200	378.401	237.470	−932.816	155.024	−1349.057	−1070.694	−708.589	33.648
	1200.00	209.200	396.604	249.984	−911.896	175.944	−1387.821	−1071.278	−675.687	29.412
	1300.00	209.200	413.349	261.915	−890.976	196.864	−1428.330	−1068.994	−642.818	25.829
	1400.00	209.200	428.852	273.292	−870.056	217.784	−1470.449	−1067.504	−610.096	22.763
	1500.00	209.200	443.286	284.150	−849.136	238.704	−1514.064	−1065.268	−577.501	20.110
	1600.00	209.200	456.787	294.522	−828.216	259.624	−1559.075	−1063.001	−545.058	17.794
	1700.00	209.200	469.470	304.444	−807.296	280.544	−1605.395	−1062.765	−512.715	15.754
	1800.00	209.200	481.427	313.947	−786.376	301.464	−1652.945	−1077.748	−480.104	13.932
	1873.00	209.200	489.744	320.638	−771.105	316.735	−1688.395	−1105.158	−454.894	12.686

References

Phase	H / S	C_p	Remarks
SOL−1	Tk1	e	
SOL−11	u	e	Tk1 MPT= 1873. (pO2= 0.21 bar)

$Co(OH)_2$ COBALT HYDROXIDE (PRECIPITATED) 92.948

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	97.064	78.998	78.998	−539.698	0.000	−563.251	−539.698	−454.168	79.568
	300.00	97.152	79.599	79.000	−539.518	0.180	−563.398	−539.672	−453.637	78.985
	400.00	101.922	108.201	82.868	−529.565	10.133	−572.845	−538.159	−425.181	55.523
	500.00	106.692	131.457	90.329	−519.134	20.564	−584.862	−536.449	−397.131	41.488

References

Phase	H / S	C_p
SOL	Nb1	e

209.950 DICOBALT SILICATE **Co2SiO4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	133.947	158.574	158.574	−1408.836	0.000	−1456.115	−1408.836	−1310.261	229.552
	300.00	134.357	159.403	158.576	−1408.588	0.248	−1456.409	−1408.825	−1309.649	228.030
	400.00	149.538	200.402	164.063	−1394.300	14.536	−1474.461	−1407.731	−1276.733	166.724
	500.00	157.749	234.727	174.860	−1378.903	29.933	−1496.266	−1406.206	−1244.157	129.976
	600.00	163.217	263.999	187.338	−1362.839	45.997	−1521.239	−1404.628	−1211.896	105.505
	700.00	167.389	289.484	200.149	−1346.302	62.534	−1548.940	−1403.119	−1179.895	88.045
	800.00	170.871	312.068	212.754	−1329.384	79.452	−1579.039	−1402.570	−1147.978	74.955
	900.00	173.951	332.375	224.936	−1312.141	96.695	−1611.278	−1401.396	−1116.228	64.784
	1000.00	176.782	350.851	236.617	−1294.602	114.234	−1645.453	−1400.541	−1084.591	56.653
	1100.00	179.451	367.826	247.784	−1276.790	132.046	−1681.398	−1400.057	−1053.023	50.004
	1200.00	182.008	383.551	258.451	−1258.716	150.120	−1718.977	−1400.076	−1021.478	44.464
	1300.00	184.487	398.217	268.644	−1240.391	168.445	−1758.073	−1400.826	−989.904	39.775
	1400.00	186.910	411.978	278.396	−1221.820	187.016	−1798.590	−1402.565	−958.235	35.752
	1500.00	189.290	424.955	287.738	−1203.010	205.826	−1840.443	−1402.221	−926.503	32.264
	1600.00	191.639	437.247	296.701	−1183.963	224.873	−1883.558	−1401.236	−894.819	29.213
	1690.00	193.731	447.791	304.469	−1166.622	242.214	−1923.388	−1450.269	−866.215	26.773
			59.418		100.416					
LIQ	1690.00	242.672	507.209	304.469	−1066.206	342.630	−1923.388	−1349.853	−866.215	26.773
	1700.00	242.672	508.640	305.666	−1063.779	345.057	−1928.468	−1349.202	−863.355	26.528
	1800.00	242.672	522.511	317.331	−1039.512	369.324	−1980.032	−1375.242	−834.376	24.213
	1900.00	242.672	535.632	328.478	−1015.244	393.592	−2032.945	−1369.274	−804.491	22.117
	2000.00	242.672	548.079	339.150	−990.977	417.859	−2087.136	−1363.352	−774.919	20.239

References

Phase	H / S	C_p
SOL	Tk1	S5
LIQ	S5	S5

CoTiO3 COBALT TITANIUM TRIOXIDE 154.811

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	107.772	97.069	97.069	–1210.431	0.000	–1239.372	–1210.431	–1129.498	197.883
	300.00	108.019	97.736	97.071	–1210.231	0.200	–1239.552	–1210.405	–1128.996	196.576
	400.00	117.023	130.210	101.437	–1198.922	11.509	–1251.006	–1208.705	–1102.102	143.920
	500.00	121.713	156.873	109.940	–1186.964	23.467	–1265.401	–1206.775	–1075.674	112.375
	600.00	124.703	179.345	119.684	–1174.634	35.797	–1282.241	–1204.864	–1049.634	91.379
	700.00	126.892	198.740	129.624	–1162.050	48.381	–1301.168	–1203.070	–1023.906	76.405
	800.00	128.653	215.802	139.351	–1149.270	61.161	–1321.912	–1201.859	–998.363	65.186
	900.00	130.166	231.044	148.707	–1136.328	74.103	–1344.268	–1200.454	–973.013	56.472
	1000.00	131.524	244.830	157.641	–1123.242	87.189	–1368.072	–1199.331	–947.805	49.508
	1100.00	132.782	257.425	166.148	–1110.026	100.405	–1393.194	–1198.512	–922.695	43.815
	1200.00	133.970	269.030	174.244	–1096.688	113.743	–1419.524	–1202.056	–897.525	39.068
	1300.00	135.111	279.799	181.955	–1083.234	127.197	–1446.972	–1201.546	–872.171	35.044
	1400.00	136.216	289.852	189.307	–1069.667	140.764	–1475.460	–1201.598	–846.836	31.596
	1500.00	137.296	299.287	196.327	–1055.991	154.440	–1504.922	–1200.682	–821.525	28.608
	1600.00	138.355	308.182	203.043	–1042.209	168.222	–1535.300	–1199.525	–796.285	25.996
	1700.00	139.400	316.601	209.477	–1028.321	182.110	–1566.543	–1198.294	–771.120	23.694
	1736.00	139.773	319.526	211.729	–1023.296	187.135	–1577.993	–1197.844	–762.079	22.930

References

Phase	H / S	C_p	Remarks	
SOL	Tk1	e	Tk1	MPT= 1736.

229.744 DICOBALT TITANIUM TETRAOXIDE **Co2TiO4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	149.370	165.268	165.268	−1445.949	0.000	−1495.224	−1445.949	−1345.810	235.780
	300.00	149.610	166.193	165.271	−1445.672	0.277	−1495.530	−1445.919	−1345.189	234.218
	400.00	158.654	210.620	171.267	−1430.208	15.741	−1514.456	−1444.114	−1311.877	171.314
	500.00	163.820	246.619	182.852	−1414.065	31.884	−1537.375	−1442.267	−1279.034	133.620
	600.00	167.460	276.824	196.064	−1397.493	48.456	−1563.588	−1440.587	−1246.548	108.522
	700.00	170.379	302.864	209.504	−1380.597	65.352	−1592.602	−1439.144	−1214.326	90.614
	800.00	172.913	325.783	222.635	−1363.430	82.519	−1624.057	−1438.808	−1182.169	77.188
	900.00	175.225	346.285	235.254	−1346.022	99.927	−1657.678	−1437.988	−1150.143	66.753
	1000.00	177.397	364.860	247.301	−1328.390	117.559	−1693.250	−1437.625	−1118.184	58.408
	1100.00	179.479	381.866	258.772	−1310.545	135.404	−1730.598	−1437.759	−1086.238	51.581
	1200.00	181.500	397.570	269.692	−1292.496	153.453	−1769.579	−1442.514	−1054.135	45.885
	1300.00	183.477	412.176	280.097	−1274.247	171.702	−1810.075	−1443.585	−1021.733	41.054
	1400.00	185.422	425.844	290.025	−1255.802	190.147	−1851.983	−1445.715	−989.209	36.908
	1500.00	187.344	438.703	299.512	−1237.163	208.786	−1895.217	−1445.836	−956.591	33.311
	1600.00	189.248	450.854	308.595	−1218.333	227.616	−1939.700	−1445.396	−923.988	30.165
	1700.00	191.138	462.384	317.305	−1199.314	246.635	−1985.367	−1444.722	−891.419	27.390
	1800.00	193.018	473.363	325.672	−1180.106	265.843	−2032.159	−1476.470	−858.307	24.907
	1835.00	193.674	477.086	328.525	−1173.339	272.610	−2048.792	−1476.351	−846.289	24.090

References

Phase	H / S	C_p	Remarks
SOL	Tk1,e	e	Tk1 MPT= 1835.

89.907 COBALT MONOPHOSPHIDE **CoP**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	45.286	50.208	50.208	−146.440	0.000	−161.410	−146.440	−140.208	24.564
	300.00	45.313	50.488	50.209	−146.356	0.084	−161.503	−146.446	−140.169	24.406
	400.00	46.777	63.724	52.004	−141.752	4.688	−167.241	−147.657	−137.828	17.999
	500.00	48.242	74.320	55.441	−137.001	9.439	−174.161	−148.277	−135.300	14.135
	600.00	49.706	83.245	59.350	−132.103	14.337	−182.050	−148.907	−132.645	11.548
	700.00	51.170	91.017	63.331	−127.060	19.380	−190.771	−149.531	−129.885	9.692
	800.00	52.635	97.945	67.232	−121.869	24.571	−200.226	−150.567	−126.975	8.291
	900.00	54.099	104.229	70.999	−116.533	29.907	−210.339	−151.211	−123.988	7.196
	1000.00	55.564	110.005	74.615	−111.050	35.390	−221.055	−151.936	−120.925	6.316
	1100.00	57.028	115.369	78.078	−105.420	41.020	−232.326	−152.766	−117.785	5.593
	1200.00	58.492	120.394	81.398	−99.644	46.796	−244.117	−217.342	−113.473	4.939
	1300.00	59.957	125.134	84.581	−93.721	52.719	−256.396	−217.861	−104.799	4.211
	1400.00	61.421	129.631	87.640	−87.653	58.787	−269.136	−218.804	−96.068	3.584
	1500.00	62.886	133.918	90.583	−81.437	65.003	−282.315	−218.635	−87.304	3.040

References

Phase	H / S	C_p
SOL	Tk1/Ku1	e

CoP3 COBALT TRIPHOSPHIDE 151.854

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	101.206	98.324	98.324	−280.328	0.000	−309.643	−280.328	−263.951	46.243
	300.00	101.253	98.950	98.326	−280.141	0.187	−309.826	−280.319	−263.850	45.940
	400.00	103.763	128.423	102.327	−269.890	10.438	−321.259	−282.386	−257.847	33.671
	500.00	106.274	151.846	109.967	−259.388	20.940	−335.311	−282.521	−251.695	26.294
	600.00	108.784	171.444	118.623	−248.635	31.693	−351.502	−282.560	−245.524	21.375
	700.00	111.294	188.402	127.407	−237.631	42.697	−369.513	−282.490	−239.355	17.861
	800.00	113.805	203.427	135.987	−226.376	53.952	−389.118	−282.725	−233.142	15.223
	900.00	116.315	216.976	144.246	−214.870	65.458	−410.149	−282.466	−226.960	13.172
	1000.00	118.826	229.361	152.147	−203.113	77.215	−432.475	−282.182	−220.808	11.534
	1100.00	121.336	240.804	159.693	−191.105	89.223	−455.990	−281.899	−214.684	10.194
	1200.00	123.846	251.470	166.901	−178.846	101.482	−480.609	−472.399	−205.316	8.937
	1300.00	126.357	261.482	173.795	−166.336	113.992	−506.262	−470.046	−183.156	7.359
	1400.00	128.867	270.938	180.400	−153.575	126.753	−532.887	−468.022	−161.166	6.013

References

Phase	H / S	C_p
SOL	Tk1/Ku1	e

Co2P DICOBALT PHOSPHIDE 148.840

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	64.809	77.404	77.404	−187.987	0.000	−211.065	−187.987	−180.906	31.694
	300.00	64.852	77.805	77.405	−187.867	0.120	−211.209	−188.003	−180.862	31.491
	400.00	67.153	96.777	79.976	−181.267	6.720	−219.978	−189.782	−178.151	23.264
	500.00	69.454	112.009	84.908	−174.436	13.551	−230.441	−191.061	−175.097	18.292
	600.00	71.756	124.875	90.524	−167.376	20.611	−242.301	−192.422	−171.777	14.955
	700.00	74.057	136.109	96.250	−160.085	27.902	−255.362	−193.836	−168.226	12.553
	800.00	76.358	146.149	101.870	−152.565	35.422	−269.483	−196.133	−164.344	10.731
	900.00	78.659	155.275	107.305	−144.814	43.173	−284.561	−197.712	−160.278	9.302
	1000.00	80.960	163.682	112.527	−136.833	51.154	−300.514	−199.514	−156.024	8.150
	1100.00	83.262	171.506	117.537	−128.622	59.365	−317.278	−201.591	−151.578	7.198
	1200.00	85.563	178.849	122.344	−120.180	67.807	−334.800	−267.649	−145.836	6.348
	1300.00	87.864	185.789	126.960	−111.509	76.478	−353.035	−270.003	−135.595	5.448
	1400.00	90.165	192.385	131.399	−102.608	85.379	−371.946	−273.263	−125.138	4.669
	1500.00	92.466	198.684	135.676	−93.476	94.511	−391.502	−274.357	−114.513	3.988
	1600.00	94.768	204.725	139.804	−84.114	103.873	−411.674	−274.728	−103.842	3.390

References

Phase	H / S	C_p
SOL	Nb1/Ku1	e

87.472

COBALT 0.89–SULFIDE

CoS0.89

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	44.878	52.300	52.300	–94.558	0.000	–110.151	–94.558	–92.688	16.239
	300.00	44.907	52.578	52.301	–94.475	0.083	–110.248	–94.558	–92.677	16.136
	400.00	46.459	65.709	54.081	–89.907	4.651	–116.190	–96.631	–91.960	12.009
	500.00	48.011	76.243	57.493	–85.183	9.375	–123.305	–98.119	–90.641	9.469
	600.00	49.564	85.134	61.378	–80.304	14.254	–131.385	–99.318	–89.025	7.750
	700.00	51.116	92.891	65.337	–75.270	19.288	–140.294	–100.265	–87.233	6.509
	800.00	52.668	99.817	69.221	–70.081	24.477	–149.935	–101.659	–85.245	5.566
	900.00	54.220	106.111	72.976	–64.737	29.821	–160.236	–149.687	–82.105	4.765
	1000.00	55.773	111.904	76.583	–59.237	35.321	–171.141	–149.395	–74.612	3.897

References

Phase	H / S	C_p
SOL	Mi1	Mi1

123.065

COBALT DISULFIDE

CoS2

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	68.215	69.036	69.036	–153.134	0.000	–173.717	–153.134	–145.645	25.516
	300.00	68.262	69.458	69.037	–153.008	0.126	–173.845	–153.138	–145.599	25.351
	400.00	70.793	89.443	71.745	–146.055	7.079	–181.832	–157.912	–142.864	18.656
	500.00	73.325	105.512	76.942	–138.849	14.285	–191.605	–161.249	–138.760	14.496
	600.00	75.856	119.104	82.864	–131.390	21.744	–202.852	–163.836	–134.001	11.666
	700.00	78.387	130.987	88.907	–123.678	29.456	–215.369	–165.779	–128.871	9.616
	800.00	80.919	141.620	94.843	–115.713	37.421	–229.008	–168.126	–123.407	8.058
	900.00	83.450	151.297	100.586	–107.494	45.640	–243.661	–275.669	–115.393	6.697
	1000.00	85.981	160.220	106.109	–99.023	54.111	–259.243	–274.443	–97.650	5.101

References

Phase	H / S	C_p
SOL	Mi1	Mi1

Co3S4 — TRICOBALT TETRASULFIDE — 305.064

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	221.563	246.019	246.019	−478.650	0.000	−552.001	−478.650	−486.900	85.303
	300.00	221.752	247.390	246.023	−478.240	0.410	−552.457	−478.546	−486.952	84.786
	400.00	231.961	312.583	254.843	−455.554	23.096	−580.587	−481.878	−490.237	64.018
	500.00	242.170	365.440	271.835	−431.848	46.802	−614.568	−481.995	−492.395	51.440
	600.00	252.379	410.495	291.279	−407.120	71.530	−653.417	−480.255	−494.595	43.058
	700.00	262.588	450.166	311.197	−381.372	97.278	−696.488	−476.852	−497.241	37.105
	800.00	272.797	485.896	330.837	−354.603	124.047	−743.320	−474.301	−500.229	32.662
	900.00	283.006	518.616	349.908	−326.813	151.837	−793.567	−681.383	−499.099	28.967

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	Mi1	Mi1	NDPT= 900.

CoSO4 — COBALT SULFATE — 154.997

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL−A	298.15	103.217	117.361	117.361	−888.263	0.000	−923.254	−888.263	−782.411	137.075
	300.00	103.543	118.001	117.363	−888.072	0.191	−923.472	−888.269	−781.754	136.115
	400.00	119.298	150.034	121.624	−876.899	11.364	−936.913	−890.183	−746.176	97.441
	500.00	131.522	178.030	130.164	−864.330	23.933	−953.345	−890.373	−710.157	74.190
	600.00	140.670	202.860	140.250	−850.697	37.566	−972.413	−889.529	−674.175	58.692
	700.00	147.306	225.071	150.810	−836.280	51.983	−993.830	−887.967	−638.400	47.638
	800.00	152.017	245.067	161.363	−821.300	66.963	−1017.354	−886.614	−602.807	39.359
	900.00	155.402	263.177	171.686	−805.921	82.342	−1042.780	−937.600	−566.286	32.866
	964.00	157.149	273.914	178.120	−795.918	92.345	−1059.971	−935.451	−539.957	29.258
			2.214		2.134					
SOL−B	964.00	157.187	276.127	178.120	−793.784	94.479	−1059.971	−933.317	−539.957	29.258
	1000.00	158.109	281.907	181.753	−788.108	100.155	−1070.016	−932.122	−525.289	27.438
	1100.00	160.423	297.088	191.557	−772.179	116.084	−1098.976	−928.881	−484.764	23.020
	1200.00	162.460	311.136	200.944	−756.033	132.230	−1129.396	−925.829	−444.526	19.350
	1300.00	164.298	324.213	209.929	−739.694	148.569	−1161.171	−923.093	−404.531	16.254
	1400.00	165.989	336.451	218.534	−723.178	165.085	−1194.210	−920.813	−364.730	13.608
	1413.00	166.200	337.987	219.626	−721.019	167.244	−1198.594	−920.412	−359.568	13.292

References

Phase	H / S	C_p	Remarks	
SOL−A	Ja1	Ja1		
SOL−B	Ja1	Ja1	Ja1	NDPT= 1413.

178.248

COBALT 0.98–ANTIMONY — CoSb0.98

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[–]
SOL	298.15	49.993	70.710	70.710	–41.840	0.000	–62.922	–41.840	–40.664	7.124
	300.00	50.041	71.019	70.711	–41.747	0.093	–63.053	–41.839	–40.657	7.079
	400.00	52.635	85.770	72.704	–36.614	5.226	–70.922	–41.781	–40.271	5.259
	500.00	55.229	97.794	76.555	–31.221	10.619	–80.117	–41.694	–39.903	4.169
	600.00	57.823	108.093	80.972	–25.568	16.272	–90.423	–41.561	–39.557	3.444
	700.00	60.417	117.201	85.509	–19.656	22.184	–101.696	–41.388	–39.236	2.928
	800.00	63.011	125.438	89.993	–13.485	28.355	–113.835	–41.620	–38.879	2.539
	900.00	65.605	133.009	94.358	–7.054	34.786	–126.762	–41.487	–38.546	2.237
	1000.00	68.199	140.056	98.579	–0.364	41.476	–140.419	–60.922	–36.153	1.888
	1100.00	70.793	146.677	102.654	6.586	48.426	–154.759	–60.875	–33.678	1.599
	1200.00	73.387	152.948	106.586	13.795	55.635	–169.743	–60.889	–31.206	1.358
	1300.00	75.981	158.925	110.384	21.264	63.104	–185.339	–61.080	–28.726	1.154
	1400.00	78.576	164.651	114.057	28.991	70.831	–201.519	–61.577	–26.221	0.978
	1475.00	80.521	168.801	116.735	34.958	76.798	–214.025	–61.088	–24.338	0.862

References

Phase	H / S	C_p	Remarks	
SOL	Hu1	e	Hu1	CoSb(0.84–0.98), MPT= 1475.

302.433

COBALT 2–ANTIMONY — CoSb2

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[–]
SOL	298.15	74.744	120.290	120.290	–50.208	0.000	–86.072	–50.208	–49.971	8.755
	300.00	74.806	120.753	120.291	–50.070	0.138	–86.295	–50.209	–49.970	8.700
	400.00	78.124	142.727	123.265	–42.423	7.785	–99.514	–50.253	–49.882	6.514
	500.00	81.442	160.516	128.990	–34.445	15.763	–114.703	–50.252	–49.789	5.201
	600.00	84.759	175.658	135.536	–26.135	24.073	–131.530	–50.194	–49.700	4.327
	700.00	88.077	188.973	142.237	–17.493	32.715	–149.774	–50.106	–49.625	3.703
	800.00	91.395	200.951	148.840	–8.519	41.689	–169.280	–50.461	–49.500	3.232
	900.00	94.713	211.907	155.247	0.786	50.994	–189.930	–50.523	–49.378	2.866
	1000.00	98.031	222.058	161.427	10.423	60.631	–211.635	–90.481	–45.018	2.351
	1100.00	101.349	231.557	167.375	20.392	70.600	–234.320	–90.616	–40.464	1.921
	1200.00	104.667	240.518	173.100	30.693	80.901	–257.928	–90.738	–35.900	1.563

References

Phase	H / S	C_p	Remarks	
SOL	Hu1	e	Hu1	DPT= 1192. (CoSb + LIQ)

CoSb3 — COBALT 3–ANTIMONY — 424.183

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	99.902	161.921	161.921	−62.760	0.000	−111.037	−62.760	−61.363	10.751
	300.00	99.977	162.539	161.923	−62.575	0.185	−111.337	−62.761	−61.354	10.683
	400.00	104.014	191.853	165.892	−52.376	10.384	−129.117	−62.815	−60.876	7.950
	500.00	108.052	215.497	173.522	−41.772	20.988	−149.521	−62.809	−60.390	6.309
	600.00	112.089	235.554	182.230	−30.765	31.995	−172.098	−62.732	−59.913	5.216
	700.00	116.127	253.136	191.128	−19.354	43.406	−196.550	−62.634	−59.451	4.436
	800.00	120.164	268.906	199.881	−7.540	55.220	−222.665	−63.016	−58.938	3.848
	900.00	124.202	283.293	208.361	4.679	67.439	−250.285	−63.174	−58.422	3.391
	1000.00	128.240	296.588	216.527	17.301	80.061	−279.287	−123.158	−51.542	2.692
	1100.00	132.277	309.000	224.376	30.326	93.086	−309.573	−123.374	−44.369	2.107
	1132.00	133.569	312.811	226.822	34.580	97.340	−319.522	−123.421	−42.070	1.941

References

Phase	H / S	C_p	Remarks
SOL	Hu1	e	Hu1 DPT= 1132. (CoSb2 + LIQ)

CoSeO3 — COBALT SELENITE — 185.891

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	97.753	113.805	113.805	−581.994	0.000	−615.925	−581.994	−502.622	88.057
	300.00	97.864	114.410	113.807	−581.813	0.181	−616.136	−581.987	−502.129	87.429
	400.00	103.847	143.383	117.717	−571.728	10.266	−629.081	−581.590	−475.568	62.103
	500.00	109.830	167.198	125.298	−561.044	20.950	−644.643	−587.044	−449.029	46.910
	600.00	115.813	187.752	134.031	−549.762	32.232	−662.412	−586.910	−421.434	36.689
	700.00	121.796	206.054	143.035	−537.881	44.113	−682.119	−586.461	−393.886	29.392
	800.00	127.779	222.708	151.968	−525.402	56.592	−703.569	−586.096	−366.362	23.921
	900.00	133.762	238.103	160.694	−512.325	69.669	−726.618	−584.990	−338.959	19.673
	932.00	135.677	242.810	163.433	−508.014	73.980	−734.313	−584.576	−330.219	18.507
			17.509		16.318					
LIQ	932.00	144.348	260.319	163.433	−491.696	90.298	−734.313	−568.258	−330.219	18.507
	1000.00	144.348	270.484	170.371	−481.880	100.114	−752.365	−566.828	−312.903	16.344
	1100.00	144.348	284.242	180.107	−467.446	114.548	−780.112	−618.310	−282.647	13.422

References

Phase	H / S	C_p
SOL	Tk1	e
LIQ	Tk1	e

177.643

COBALT TIN — CoSn

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−D	298.15	51.219	71.546	71.546	−29.288	0.000	−50.620	−29.288	−26.399	4.625
	300.00	51.254	71.863	71.547	−29.193	0.095	−50.752	−29.289	−26.381	4.593
	400.00	53.137	86.866	73.580	−23.974	5.314	−58.720	−29.426	−25.395	3.316
	500.00	55.020	98.925	77.481	−18.566	10.722	−68.029	−29.731	−24.356	2.544
	600.00	56.902	109.123	81.926	−12.970	16.318	−78.444	−36.984	−21.936	1.910
	700.00	58.785	118.036	86.461	−7.185	22.103	−89.811	−37.096	−19.418	1.449
	800.00	60.668	126.009	90.915	−1.213	28.075	−102.020	−37.561	−16.827	1.099
	900.00	62.551	133.263	95.223	4.948	34.236	−114.988	−37.594	−14.233	0.826
	1000.00	64.434	139.951	99.365	11.297	40.585	−128.653	−37.665	−11.634	0.608
	1100.00	66.316	146.180	103.341	17.835	47.123	−142.963	−37.800	−9.026	0.429
	1200.00	68.199	152.031	107.157	24.561	53.849	−157.877	−38.067	−6.399	0.279
	1209.00	68.369	152.542	107.493	25.175	54.463	−159.247	−38.101	−6.162	0.266

References

Phase	H / S	C_p	Remarks
SOL−D	Ku1	e	Hu1 DPT= 1209. (Co3Sn2 + LIQ)

306.781

COBALT TUNGSTATE — CoWO4

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	129.702	133.888	133.888	−1136.918	0.000	−1176.837	−1136.918	−1035.813	181.470
	300.00	129.792	134.691	133.890	−1136.678	0.240	−1177.085	−1136.878	−1035.186	180.242
	400.00	134.641	172.693	139.039	−1123.456	13.462	−1192.534	−1134.627	−1001.625	130.799
	500.00	139.490	203.259	148.922	−1109.750	27.168	−1211.379	−1132.292	−968.643	101.193
	600.00	144.340	229.119	160.187	−1095.558	41.360	−1233.030	−1129.872	−936.139	81.498
	700.00	149.189	251.734	171.682	−1080.882	56.036	−1257.095	−1127.341	−904.048	67.461
	800.00	154.038	271.972	182.975	−1065.720	71.198	−1283.298	−1125.091	−872.268	56.953
	900.00	158.887	290.395	193.902	−1050.074	86.844	−1311.429	−1122.293	−840.832	48.801
	986.00	163.058	305.082	202.965	−1036.231	100.687	−1337.042	−1119.807	−814.052	43.125
			1.888		1.862					
SOL−B	986.00	163.719	306.971	202.965	−1034.369	102.549	−1337.042	−1117.945	−814.052	43.125
	1000.00	164.306	309.283	204.438	−1032.072	104.846	−1341.356	−1117.524	−809.740	42.296
	1100.00	168.498	325.140	214.698	−1015.432	121.486	−1373.086	−1114.509	−779.107	36.997
	1200.00	172.690	339.981	224.526	−998.373	138.545	−1406.350	−1111.519	−748.749	32.592
	1300.00	176.883	353.969	233.951	−980.894	156.024	−1441.054	−1108.661	−718.635	28.875
	1400.00	181.075	367.231	243.001	−962.996	173.922	−1477.119	−1106.055	−688.732	25.697
	1500.00	185.268	379.867	251.707	−944.679	192.239	−1514.479	−1102.162	−659.055	22.950

References

Phase	H / S	C_p
SOL−A	Tk1	Ku1,e
SOL−B	Tk1	Ku1

Cr CHROMIUM 51.996

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[–]
SOL	298.15	23.347	23.640	23.640	0.000	0.000	–7.048	0.000	0.000	0.000
	300.00	23.379	23.784	23.640	0.043	0.043	–7.092	0.000	0.000	0.000
	400.00	25.189	30.758	24.579	2.472	2.472	–9.831	0.000	0.000	0.000
	500.00	26.815	36.559	26.410	5.074	5.074	–13.205	0.000	0.000	0.000
	600.00	28.167	41.571	28.529	7.826	7.826	–17.117	0.000	0.000	0.000
	700.00	29.279	46.000	30.714	10.700	10.700	–21.500	0.000	0.000	0.000
	800.00	30.214	49.972	32.877	13.676	13.676	–26.302	0.000	0.000	0.000
	900.00	31.044	53.579	34.980	16.739	16.739	–31.482	0.000	0.000	0.000
	1000.00	32.024	56.892	37.008	19.885	19.885	–37.008	0.000	0.000	0.000
	1100.00	33.647	60.018	38.959	23.165	23.165	–42.855	0.000	0.000	0.000
	1200.00	35.446	63.022	40.840	26.620	26.620	–49.007	0.000	0.000	0.000
	1300.00	37.146	65.928	42.658	30.250	30.250	–55.456	0.000	0.000	0.000
	1400.00	38.734	68.739	44.421	34.045	34.045	–62.190	0.000	0.000	0.000
	1500.00	40.439	71.468	46.134	38.001	38.001	–69.201	0.000	0.000	0.000
	1600.00	42.419	74.144	47.801	42.149	42.149	–76.482	0.000	0.000	0.000
	1700.00	44.106	76.767	49.428	46.477	46.477	–84.028	0.000	0.000	0.000
	1800.00	45.662	79.333	51.018	50.966	50.966	–91.833	0.000	0.000	0.000
	1900.00	47.186	81.842	52.575	55.608	55.608	–99.893	0.000	0.000	0.000
	2000.00	48.712	84.302	54.100	60.403	60.403	–108.200	0.000	0.000	0.000
	2100.00	50.193	86.714	55.596	65.349	65.349	–116.751	0.000	0.000	0.000
	2130.00	50.611	87.429	56.039	66.861	66.861	–119.363	0.000	0.000	0.000
			7.950		16.933					
LIQ	2130.00	39.330	95.379	56.039	83.794	83.794	–119.363	0.000	0.000	0.000
	2200.00	39.330	96.651	57.311	86.547	86.547	–126.085	0.000	0.000	0.000
	2300.00	39.330	98.399	59.060	90.480	90.480	–135.838	0.000	0.000	0.000
	2400.00	39.330	100.073	60.734	94.413	94.413	–145.762	0.000	0.000	0.000
	2500.00	39.330	101.679	62.340	98.346	98.346	–155.850	0.000	0.000	0.000
	2600.00	39.330	103.221	63.883	102.279	102.279	–166.096	0.000	0.000	0.000
	2700.00	39.330	104.705	65.368	106.212	106.212	–176.493	0.000	0.000	0.000
	2800.00	39.330	106.136	66.798	110.145	110.145	–187.035	0.000	0.000	0.000
	2900.00	39.330	107.516	68.179	114.078	114.078	–197.718	0.000	0.000	0.000
	2942.00	39.330	108.081	68.744	115.730	115.730	–202.246	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks
SOL	Hu1	Hu1	
LIQ	Hu1	Hu1	Hu1 BPT= 2942., L= 344.3 kJ

51.996

CHROMIUM (GAS)

Cr[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	20.786	174.306	174.306	397.480	0.000	345.511	397.480	352.559	−61.767
	300.00	20.786	174.435	174.306	397.518	0.038	345.188	397.475	352.280	−61.337
	400.00	20.786	180.414	175.122	399.597	2.117	327.431	397.125	337.263	−44.042
	500.00	20.786	185.053	176.661	401.676	4.196	309.149	396.601	322.354	−33.676
	600.00	20.786	188.843	178.385	403.754	6.274	290.449	395.929	307.566	−26.776
	700.00	20.786	192.047	180.114	405.833	8.353	271.400	395.133	292.900	−21.856
	800.00	20.830	194.826	181.783	407.914	10.434	252.054	394.239	278.355	−18.175
	900.00	20.827	197.280	183.371	409.997	12.517	232.446	393.258	263.928	−15.318
	1000.00	20.835	199.474	184.874	412.080	14.600	212.606	392.196	249.614	−13.039
	1100.00	20.887	201.462	186.293	414.166	16.686	192.558	391.001	235.412	−11.179
	1200.00	21.004	203.284	187.634	416.260	18.780	172.319	389.640	221.327	−9.634
	1300.00	21.194	204.972	188.903	418.369	20.889	151.906	388.119	207.361	−8.332
	1400.00	21.461	206.552	190.108	420.501	23.021	131.329	386.457	193.518	−7.220
	1500.00	21.802	208.044	191.255	422.664	25.184	110.598	384.663	179.799	−6.261
	1600.00	22.215	209.464	192.349	424.864	27.384	89.722	382.715	166.204	−5.426
	1700.00	22.693	210.825	193.396	427.109	29.629	68.707	380.632	152.735	−4.693
	1800.00	23.228	212.137	194.401	429.405	31.925	47.559	378.439	139.392	−4.045
	1900.00	23.814	213.408	195.368	431.756	34.276	26.281	376.148	126.174	−3.469
	2000.00	24.440	214.645	196.301	434.169	36.689	4.878	373.766	113.079	−2.953
	2100.00	25.098	215.853	197.203	436.645	39.165	−16.647	371.296	100.105	−2.490
	2200.00	25.778	217.037	198.078	439.189	41.709	−38.291	352.642	87.793	−2.084
	2300.00	26.470	218.198	198.928	441.802	44.322	−60.053	351.321	75.785	−1.721
	2400.00	27.163	219.339	199.754	444.483	47.003	−81.930	350.070	63.832	−1.389
	2500.00	27.846	220.462	200.560	447.234	49.754	−103.920	348.888	51.930	−1.085
	2600.00	28.510	221.567	201.347	450.052	52.572	−126.022	347.773	40.074	−0.805
	2700.00	29.144	222.655	202.116	452.935	55.455	−148.233	346.723	28.259	−0.547
	2800.00	29.736	223.726	202.869	455.879	58.399	−170.552	345.734	16.483	−0.307
	2900.00	30.276	224.779	203.606	458.880	61.400	−192.978	344.802	4.740	−0.085
	3000.00	30.753	225.813	204.329	461.932	64.452	−215.508	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1

CrAsO4 — CHROMIUM ARSENATE — 190.915

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	119.104	155.352	155.352	−1062.067	0.000	−1108.385	−1062.067	−968.362	169.653
	300.00	119.420	156.090	155.354	−1061.846	0.221	−1108.673	−1062.044	−967.781	168.506
	400.00	131.814	192.323	160.210	−1049.222	12.845	−1126.151	−1060.297	−936.600	122.307
	500.00	139.499	222.612	169.746	−1035.634	26.433	−1146.940	−1057.996	−905.935	94.642
	600.00	145.330	248.579	180.772	−1021.382	40.685	−1170.530	−1055.437	−875.760	76.242
	700.00	150.287	271.362	192.119	−1006.596	55.471	−1196.550	−1052.712	−846.027	63.131
	800.00	154.777	291.727	203.319	−991.340	70.727	−1224.722	−1049.838	−816.694	53.325
	820.00	155.638	295.560	205.522	−988.236	73.831	−1230.595	−1049.245	−810.873	51.653

References

Phase	H / S	C_p
SOL	G1	G1

Cr3(AsO4)2 — TRICHROMIUM ARSENATE — 433.827

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	261.829	321.415	321.415	−2218.231	0.000	−2314.061	−2218.231	−2026.966	355.116
	300.00	262.429	323.036	321.420	−2217.746	0.485	−2314.657	−2218.184	−2025.780	352.720
	400.00	286.245	402.126	332.042	−2190.197	28.034	−2351.048	−2214.819	−1962.114	256.226
	500.00	301.420	467.722	352.806	−2160.773	57.458	−2394.634	−2210.571	−1899.418	198.431
	600.00	313.192	523.752	376.740	−2130.024	88.207	−2444.275	−2205.959	−1837.617	159.979
	700.00	323.359	572.808	401.317	−2098.187	120.044	−2499.153	−2201.119	−1776.606	132.572
	800.00	332.670	616.602	425.538	−2065.380	152.851	−2558.662	−2196.051	−1716.304	112.063
	859.00	337.915	640.459	439.488	−2045.597	172.634	−2595.751	−2192.939	−1681.034	102.221

References

Phase	H / S	C_p
SOL	G1	G1

62.807

CHROMIUM MONOBORIDE

CrB

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	35.824	35.146	35.146	−75.312	0.000	−85.791	−75.312	−77.004	13.491
	300.00	35.992	35.368	35.146	−75.246	0.066	−85.856	−75.310	−77.015	13.409
	400.00	42.476	46.711	36.649	−71.287	4.025	−89.972	−75.145	−77.607	10.134
	500.00	46.338	56.632	39.676	−66.834	8.478	−95.150	−75.025	−78.238	8.173
	600.00	49.168	65.340	43.242	−62.053	13.259	−101.257	−74.976	−78.887	6.868
	700.00	51.510	73.100	46.963	−57.016	18.296	−108.186	−74.968	−79.539	5.935
	800.00	53.593	80.116	50.676	−51.760	23.552	−115.853	−74.970	−80.192	5.236
	900.00	55.525	86.541	54.309	−46.303	29.009	−124.190	−74.959	−80.845	4.692
	1000.00	57.363	92.487	57.833	−40.658	34.654	−133.145	−74.922	−81.501	4.257
	1100.00	59.139	98.038	61.238	−34.832	40.480	−142.674	−74.907	−82.160	3.901
	1200.00	60.874	103.259	64.525	−28.831	46.481	−152.742	−74.950	−82.818	3.605

References

Phase	H / S	C_p	Remarks
SOL	Ku1/Tk1	Ku1	Tk1 MPT= 2343.

73.618

CHROMIUM DIBORIDE

CrB2

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	53.640	38.911	38.911	−94.140	0.000	−105.741	−94.140	−95.217	16.682
	300.00	53.723	39.243	38.912	−94.041	0.099	−105.814	−94.126	−95.224	16.580
	400.00	58.199	55.311	41.073	−88.445	5.695	−110.569	−93.688	−95.672	12.493
	500.00	62.676	68.779	45.301	−82.401	11.739	−116.790	−93.708	−96.172	10.047
	600.00	67.153	80.602	50.218	−75.909	18.231	−124.271	−93.929	−96.646	8.414
	700.00	71.630	91.290	55.333	−68.970	25.170	−132.873	−94.174	−97.079	7.244
	800.00	76.107	101.147	60.451	−61.583	32.557	−142.501	−94.329	−97.482	6.365
	900.00	80.584	110.370	65.491	−53.749	40.391	−153.082	−94.322	−97.874	5.680
	1000.00	85.061	119.092	70.418	−45.467	48.673	−164.558	−94.110	−98.278	5.134
	1100.00	89.538	127.409	75.224	−36.737	57.403	−176.886	−93.721	−98.713	4.687
	1200.00	94.014	135.392	79.907	−27.559	66.581	−190.029	−93.176	−99.189	4.318

References

Phase	H / S	C_p	Remarks
SOL	Ku1/Tk1	Ku1	Tk1 MPT= 2437.

CrBr2 CHROMIUM DIBROMIDE 211.804

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	72.510	133.888	133.888	−302.085	0.000	−342.004	−302.085	−289.574	50.732
	300.00	72.551	134.337	133.889	−301.951	0.134	−342.252	−302.134	−289.496	50.406
	400.00	74.768	155.512	136.762	−294.585	7.500	−356.790	−331.679	−279.142	36.452
	500.00	76.986	172.434	142.258	−286.997	15.088	−373.214	−330.386	−266.156	27.805
	600.00	79.203	186.666	148.504	−279.188	22.897	−391.188	−329.046	−253.435	22.063
	700.00	81.421	199.042	154.859	−271.157	30.928	−410.486	−327.624	−240.944	17.979
	800.00	83.638	210.059	161.082	−262.904	39.181	−430.951	−326.095	−228.665	14.930
	900.00	85.856	220.038	167.087	−254.429	47.656	−452.463	−324.441	−216.584	12.570
	1000.00	88.073	229.199	172.846	−245.733	56.352	−474.931	−322.656	−204.694	10.692
	1100.00	90.291	237.697	178.360	−236.814	65.271	−498.281	−320.791	−192.988	9.164
	1115.00	90.623	238.922	179.166	−235.457	66.628	−501.856	−320.507	−191.247	8.959

References

Phase	H / S	C_p	Remarks
SOL	Nb1/Tk1	e	Tk1 MPT= 1115.

CrBr3 CHROMIUM TRIBROMIDE 291.708

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	96.440	159.670	159.670	−432.626	0.000	−480.232	−432.626	−405.111	70.974
	300.00	96.524	160.267	159.672	−432.448	0.178	−480.527	−432.701	−404.940	70.506
	400.00	99.771	188.528	163.503	−422.616	10.010	−498.027	−477.021	−386.471	50.468
	500.00	101.741	211.017	170.833	−412.534	20.092	−518.043	−475.080	−364.058	38.033
	600.00	103.210	229.701	179.131	−402.284	30.342	−540.105	−473.158	−342.035	29.777
	700.00	104.441	245.706	187.526	−391.900	40.726	−563.894	−471.251	−320.332	23.903
	800.00	105.546	259.725	195.692	−381.400	51.226	−589.180	−469.349	−298.902	19.516
	900.00	106.577	272.217	203.514	−370.793	61.833	−615.788	−467.442	−277.710	16.118
	1000.00	107.563	283.497	210.957	−360.086	72.540	−643.583	−465.528	−256.732	13.410
	1100.00	108.519	293.794	218.026	−349.281	83.345	−672.455	−463.664	−235.943	11.204

References

Phase	H / S	C_p
SOL	Pa2	Pa2

371.612

CHROMIUM TETRABROMIDE (GAS) **CrBr4**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	101.329	417.417	417.417	−258.571	0.000	−383.024	−258.571	−285.213	49.968
	300.00	101.408	418.044	417.419	−258.383	0.188	−383.797	−258.707	−285.378	49.689
	400.00	104.215	447.659	421.438	−248.083	10.488	−427.146	−319.799	−281.682	36.784
	500.00	105.532	471.072	429.106	−237.588	20.983	−473.124	−319.291	−272.213	28.438
	600.00	106.264	490.383	437.756	−226.995	31.576	−521.225	−318.886	−262.837	22.882
	700.00	106.718	506.800	446.476	−216.344	42.227	−571.104	−318.580	−253.521	18.918
	800.00	107.025	521.071	454.928	−205.656	52.915	−622.514	−318.363	−244.243	15.947
	900.00	107.246	533.691	462.992	−194.942	63.629	−675.264	−318.227	−234.987	13.638
	1000.00	107.415	544.999	470.637	−184.209	74.362	−729.208	−318.171	−225.742	11.792
	1100.00	107.548	555.243	477.870	−173.460	85.111	−784.228	−318.248	−216.497	10.281
	1200.00	107.657	564.606	484.714	−162.700	95.871	−840.227	−318.502	−207.237	9.021
	1300.00	107.750	573.227	491.195	−151.929	106.642	−897.125	−318.933	−197.949	7.954

References

Phase	H / S	C_p
GAS	Pa2	Pa2

180.010

3−CHROMIUM 2−CARBIDE **Cr3C2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	99.326	85.437	85.437	−85.354	0.000	−110.827	−85.354	−86.260	15.112
	300.00	99.634	86.053	85.439	−85.170	0.184	−110.986	−85.331	−86.265	15.020
	400.00	115.482	116.990	89.549	−74.378	10.976	−121.173	−83.899	−86.782	11.333
	500.00	125.543	143.942	97.795	−62.280	23.074	−134.251	−82.271	−87.691	9.161
	600.00	131.490	167.400	107.485	−49.405	35.949	−149.845	−80.811	−88.917	7.741
	700.00	135.656	187.993	117.546	−36.041	49.313	−167.636	−79.625	−90.365	6.743
	800.00	139.118	206.339	127.519	−22.298	63.056	−187.369	−78.657	−91.967	6.005
	900.00	142.265	222.908	137.212	−8.227	77.127	−208.845	−77.843	−93.681	5.437
	1000.00	145.319	238.056	146.550	6.152	91.506	−231.904	−77.138	−95.480	4.987
	1100.00	148.367	252.049	155.512	20.836	106.190	−256.417	−76.673	−97.340	4.622
	1200.00	151.440	265.090	164.106	35.826	121.180	−282.282	−76.538	−99.227	4.319
	1300.00	154.550	277.334	172.350	51.126	136.480	−309.409	−76.715	−101.113	4.063
	1400.00	157.697	288.903	180.266	66.738	152.092	−337.726	−77.144	−102.975	3.842
	1500.00	160.878	299.891	187.877	82.666	168.020	−367.170	−77.803	−104.798	3.649
	1600.00	164.090	310.376	195.208	98.914	184.268	−397.687	−78.766	−106.568	3.479
	1700.00	167.329	320.421	202.280	115.485	200.839	−429.231	−79.987	−108.270	3.327
	1800.00	170.590	330.077	209.114	132.381	217.735	−461.759	−81.400	−109.893	3.189
	1900.00	173.872	339.389	215.727	149.604	234.958	−495.235	−82.973	−111.434	3.064
	2000.00	177.170	348.391	222.136	167.156	252.510	−529.626	−84.700	−112.888	2.948
	2100.00	180.483	357.115	228.357	185.038	270.392	−564.904	−86.574	−114.252	2.842
	2168.00	182.744	362.903	232.487	197.388	282.742	−589.385	−137.400	−114.232	2.752

References

Phase	H / S	C_p	Remarks	
SOL	Ja1,A1	Ja1	Ja1,Hu1	MPT= 2168./2190. (peritec.)

Cr7C3 — 7–CHROMIUM 3–CARBIDE — 400.006

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	209.764	200.999	200.999	–160.666	0.000	–220.594	–160.666	–166.122	29.104
	300.00	210.355	202.299	201.003	–160.277	0.389	–220.967	–160.627	–166.156	28.930
	400.00	236.717	266.708	209.605	–137.825	22.841	–244.508	–158.287	–168.341	21.983
	500.00	252.869	321.410	226.639	–113.281	47.385	–273.986	–155.953	–171.132	17.878
	600.00	263.506	368.507	246.452	–87.433	73.233	–308.537	–154.105	–174.351	15.179
	700.00	271.955	409.775	266.896	–60.651	100.015	–347.493	–152.776	–177.837	13.270
	800.00	279.637	446.597	287.098	–33.067	127.599	–390.344	–151.795	–181.487	11.850
	900.00	287.019	479.961	306.702	–4.733	155.933	–436.698	–151.003	–185.247	10.751
	1000.00	294.368	510.581	325.579	24.336	185.002	–486.245	–150.311	–189.091	9.877
	1100.00	301.776	538.984	343.704	54.143	214.809	–538.740	–150.033	–192.987	9.164
	1200.00	309.269	565.563	361.096	84.694	245.360	–593.981	–150.401	–196.881	8.570
	1300.00	316.847	590.616	377.797	115.999	276.665	–651.802	–151.387	–200.718	8.065
	1400.00	324.504	614.377	393.854	148.066	308.732	–712.062	–152.868	–204.460	7.629
	1500.00	332.228	637.029	409.316	180.902	341.568	–774.640	–154.803	–208.081	7.246
	1600.00	340.011	658.718	424.231	214.514	375.180	–839.435	–157.379	–211.552	6.906
	1700.00	347.842	679.566	438.641	248.906	409.572	–906.356	–160.494	–214.845	6.601
	1800.00	355.716	699.671	452.588	284.084	444.750	–975.324	–164.001	–217.943	6.325
	1900.00	363.625	719.115	466.106	320.051	480.717	–1046.268	–167.835	–220.836	6.071
	2000.00	371.564	737.968	479.231	356.810	517.476	–1119.127	–171.982	–223.520	5.838
	2053.00	375.782	747.742	486.037	376.614	537.280	–1158.499	–174.304	–224.855	5.721

References

Phase	H / S	C_p	Remarks	
SOL	Ja1,A1	Ja1	Ja1,Hu1	MPT= 2053. (peritec.)

1267.976

23–CHROMIUM 6–CARBIDE **Cr23C6**

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	628.117	612.119	612.119	–328.444	0.000	–510.947	–328.444	–338.571	59.316
	300.00	629.728	616.010	612.131	–327.280	1.164	–512.083	–328.370	–338.634	58.961
	400.00	704.387	808.051	637.806	–260.346	68.098	–583.566	–323.516	–342.750	44.759
	500.00	753.502	970.905	688.563	–187.273	141.171	–672.726	–318.287	–348.173	36.373
	600.00	785.791	1111.333	747.596	–110.202	218.242	–777.002	–313.979	–354.575	30.869
	700.00	808.099	1234.236	808.522	–30.444	298.000	–894.409	–310.993	–361.596	26.983
	800.00	829.084	1343.518	868.689	51.419	379.863	–1023.395	–309.118	–368.963	24.091
	900.00	850.238	1442.386	927.025	135.380	463.824	–1162.767	–307.812	–376.526	21.853
	1000.00	872.135	1533.093	983.157	221.492	549.936	–1311.601	–306.763	–384.222	20.070
	1100.00	894.857	1617.276	1037.022	309.835	638.279	–1469.169	–307.001	–391.972	18.613
	1200.00	918.337	1696.140	1088.696	400.489	728.933	–1634.879	–309.279	–399.612	17.395
	1300.00	942.477	1770.595	1138.312	493.524	821.968	–1808.250	–313.503	–406.981	16.353
	1400.00	967.178	1841.341	1186.022	589.003	917.447	–1988.875	–319.268	–413.964	15.445
	1500.00	992.355	1908.926	1231.979	686.976	1015.420	–2176.413	–326.442	–420.487	14.643
	1600.00	1017.937	1973.785	1276.328	787.487	1115.931	–2370.569	–335.639	–426.467	13.923
	1700.00	1043.869	2036.274	1319.204	890.575	1219.019	–2571.091	–346.516	–431.818	13.268
	1793.00	1068.257	2092.515	1357.863	988.787	1317.231	–2763.093	–357.713	–436.188	12.707

References

Phase	H / S	C_p	Remarks
SOL	Ja1	Ja1	Ja1/Hu1 DPT= 1793./1791. (peritec.)

220.058

CHROMIUM HEXACARBONYL **Cr(CO)6**

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	240.160	314.218	314.218	–1076.962	0.000	–1170.646	–1076.962	–969.835	169.911
	300.00	240.300	315.704	314.223	–1076.518	0.444	–1171.229	–1076.819	–969.171	168.748
	400.00	247.831	385.866	323.738	–1052.111	24.851	–1206.457	–1069.976	–934.364	122.015
	425.00	249.714	400.947	327.840	–1045.892	31.070	–1216.294	–1068.501	–925.934	113.802

References

Phase	H / S	C_p	Remarks
SOL	Nb1/Tk1	Tk1,e	Tk1 MPT= 425.

CrCl2 CHROMIUM DICHLORIDE 122.901

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	71.170	115.311	115.311	−395.388	0.000	−429.768	−395.388	−356.198	62.404
	300.00	71.268	115.752	115.312	−395.256	0.132	−429.982	−395.362	−355.955	61.977
	400.00	75.138	136.837	118.161	−387.918	7.470	−442.652	−393.919	−343.034	44.796
	500.00	77.627	153.886	123.655	−380.273	15.115	−457.216	−392.448	−330.483	34.525
	600.00	79.573	168.216	129.919	−372.410	22.978	−473.340	−390.972	−318.228	27.704
	700.00	81.263	180.612	136.295	−364.366	31.022	−490.795	−389.479	−306.222	22.851
	800.00	82.815	191.565	142.532	−356.162	39.226	−509.414	−387.955	−294.432	19.224
	900.00	84.288	201.405	148.536	−347.806	47.582	−529.071	−386.389	−282.835	16.415
	1000.00	85.712	210.360	154.278	−339.306	56.082	−549.666	−384.775	−271.415	14.177
	1088.00	86.937	217.640	159.111	−331.709	63.679	−568.501	−383.359	−261.500	12.555
			29.611		32.217					
LIQ	1088.00	100.416	247.251	159.111	−299.492	95.896	−568.501	−351.142	−261.500	12.555
	1100.00	100.416	248.353	160.079	−298.287	97.101	−571.475	−350.791	−260.514	12.371
	1200.00	100.416	257.090	167.804	−288.245	107.143	−596.753	−347.968	−252.433	10.988
	1300.00	100.416	265.128	174.986	−278.204	117.184	−622.870	−345.330	−244.580	9.827
	1400.00	100.416	272.569	181.694	−268.162	127.226	−649.759	−342.864	−236.923	8.840
	1500.00	100.416	279.497	187.986	−258.121	137.267	−677.366	−340.567	−229.437	7.990

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	Pa2		
LIQ	Pa2	e	Tk1	BPT= 1600.

CrCl3 CHROMIUM TRICHLORIDE 158.354

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	91.799	123.010	123.010	−556.472	0.000	−593.147	−556.472	−486.316	85.201
	300.00	91.963	123.578	123.011	−556.302	0.170	−593.375	−556.439	−485.881	84.599
	400.00	98.195	150.987	126.706	−546.760	9.712	−607.154	−554.526	−462.643	60.415
	500.00	101.829	173.317	133.865	−536.746	19.726	−623.404	−552.472	−439.908	45.957
	600.00	104.441	192.124	142.048	−526.427	30.045	−641.701	−550.357	−417.593	36.355
	700.00	106.570	208.387	150.390	−515.874	40.598	−661.745	−548.193	−395.636	29.523
	800.00	108.442	222.742	158.554	−505.121	51.351	−683.315	−545.974	−373.993	24.419
	900.00	110.164	235.615	166.413	−494.190	62.282	−706.244	−543.695	−352.632	20.466
	1000.00	111.793	247.307	173.927	−483.092	73.380	−730.399	−541.354	−331.528	17.317
	1100.00	113.362	258.036	181.092	−471.833	84.639	−755.673	−539.006	−310.659	14.752
	1200.00	114.889	267.966	187.923	−460.421	96.051	−781.980	−536.694	−290.002	12.623

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	Pa2	Pa2	NSPT= 1280.

193.807 CHROMIUM TETRACHLORIDE (GAS) **CrCl4[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	96.121	364.402	364.402	−426.768	0.000	−535.414	−426.768	−395.322	69.259
	300.00	96.255	364.997	364.404	−426.590	0.178	−536.089	−426.759	−395.127	68.798
	400.00	101.012	393.435	368.249	−416.694	10.074	−574.068	−426.225	−384.662	50.232
	500.00	103.284	416.245	375.643	−406.467	20.301	−614.590	−425.743	−374.329	39.106
	600.00	104.578	435.200	384.035	−396.069	30.699	−657.189	−425.367	−364.084	31.696
	700.00	105.411	451.388	392.528	−385.567	41.201	−701.538	−425.092	−353.893	26.408
	800.00	105.997	465.504	400.787	−374.995	51.773	−747.398	−424.906	−343.735	22.444
	900.00	106.440	478.015	408.686	−364.372	62.396	−794.585	−424.799	−333.596	19.361
	1000.00	106.795	489.249	416.190	−353.709	73.059	−842.958	−424.764	−323.465	16.896
	1100.00	107.091	499.441	423.302	−343.015	83.753	−892.400	−424.857	−313.332	14.879
	1200.00	107.348	508.771	430.041	−332.293	94.475	−942.818	−425.117	−303.184	13.197
	1300.00	107.578	517.373	436.433	−321.546	105.222	−994.130	−425.548	−293.006	11.773

References

Phase	H / S	C_p
GAS	Pa2	Pa2

89.993 CHROMIUM DIFLUORIDE **CrF2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	64.764	86.868	86.868	−778.224	0.000	−804.124	−778.224	−736.612	129.051
	300.00	64.882	87.269	86.869	−778.104	0.120	−804.285	−778.205	−736.354	128.211
	400.00	69.640	106.648	89.479	−771.356	6.868	−814.016	−777.100	−722.567	94.358
	500.00	72.782	122.543	94.550	−764.228	13.996	−825.499	−775.937	−709.068	74.076
	600.00	75.288	136.040	100.368	−756.821	21.403	−838.445	−774.754	−695.805	60.575
	700.00	77.494	147.815	106.323	−749.180	29.044	−852.650	−773.537	−682.742	50.947
	800.00	79.540	158.297	112.176	−741.327	36.897	−867.965	−772.267	−669.857	43.737
	900.00	81.493	167.779	117.836	−733.275	44.949	−884.276	−770.926	−657.136	38.139
	1000.00	83.388	176.464	123.270	−725.030	53.194	−901.494	−769.507	−644.568	33.669
	1100.00	85.245	184.499	128.476	−716.599	61.625	−919.547	−768.062	−632.144	30.018
	1200.00	87.076	191.995	133.460	−707.982	70.242	−938.376	−766.629	−619.851	26.981

References

Phase	H / S	C_p
SOL	Pa2	Pa2

CrF3 CHROMIUM TRIFLUORIDE 108.991

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	78.744	93.881	93.881	−1173.194	0.000	−1201.185	−1173.194	−1103.441	193.318
	300.00	78.987	94.368	93.882	−1173.048	0.146	−1201.359	−1173.178	−1103.009	192.051
	400.00	87.912	118.477	97.108	−1164.647	8.547	−1212.037	−1172.026	−1079.780	141.005
	500.00	92.594	138.642	103.456	−1155.601	17.593	−1224.922	−1170.627	−1056.878	110.411
	600.00	95.605	155.807	110.787	−1146.182	27.012	−1239.666	−1169.169	−1034.264	90.041
	700.00	97.828	170.718	118.307	−1136.506	36.688	−1256.009	−1167.693	−1011.897	75.509
	800.00	99.630	183.902	125.698	−1126.630	46.564	−1273.752	−1166.202	−989.742	64.624
	900.00	101.188	195.729	132.833	−1116.588	56.606	−1292.744	−1164.695	−967.775	56.168
	1000.00	102.594	206.464	139.668	−1106.398	66.796	−1312.862	−1163.170	−945.976	49.413
	1100.00	103.901	216.304	146.194	−1096.072	77.122	−1334.007	−1161.685	−924.329	43.893
	1200.00	105.141	225.398	152.420	−1085.620	87.574	−1356.098	−1160.279	−902.814	39.298

References

Phase	H / S	C_p
SOL	Pa2	Pa2

CrF4 CHROMIUM TETRAFLUORIDE 127.990

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	100.292	128.867	128.867	−1246.832	0.000	−1285.254	−1246.832	−1157.279	202.750
	300.00	100.416	129.488	128.869	−1246.646	0.186	−1285.493	−1246.805	−1156.723	201.403
	400.00	107.110	159.293	132.888	−1236.270	10.562	−1299.987	−1245.285	−1126.921	147.161
	500.00	113.805	183.913	140.697	−1225.224	21.608	−1317.181	−1243.568	−1097.523	114.657
	600.00	120.499	205.254	149.715	−1213.509	33.323	−1336.661	−1241.550	−1068.498	93.021

References

Phase	H / S	C_p
SOL	Nb1/e	e

305.805

CHROMIUM DIIODIDE

CrI2

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	73.680	169.034	169.034	−156.900	0.000	−207.297	−156.900	−165.621	29.016
	300.00	73.722	169.489	169.035	−156.764	0.136	−207.611	−156.908	−165.676	28.847
	400.00	75.981	191.007	171.954	−149.278	7.622	−225.681	−173.490	−167.964	21.934
	500.00	78.241	208.205	177.540	−141.567	15.333	−245.670	−216.575	−162.441	16.970
	600.00	80.500	222.670	183.887	−133.630	23.270	−267.232	−215.140	−151.747	13.211
	700.00	82.760	235.248	190.345	−125.467	31.433	−290.141	−213.614	−141.301	10.544
	800.00	85.019	246.447	196.670	−117.078	39.822	−314.236	−211.973	−131.081	8.559
	900.00	87.278	256.591	202.773	−108.464	48.436	−339.396	−210.202	−121.075	7.027
	1000.00	89.538	265.904	208.627	−99.623	57.277	−365.527	−208.294	−111.273	5.812
	1066.00	91.029	271.674	212.353	−93.664	63.236	−383.268	−206.986	−104.912	5.141

References

Phase	H / S	C_p	Remarks
SOL	Nb1/e	e	Ku1 MPT= 1066.

432.710

CHROMIUM TRIIODIDE

CrI3

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	111.674	199.577	199.577	−205.016	0.000	−264.520	−205.016	−205.530	36.008
	300.00	111.713	200.268	199.579	−204.809	0.207	−264.890	−205.004	−205.533	35.787
	400.00	113.805	232.692	203.986	−193.533	11.483	−286.610	−228.614	−204.950	26.764
	500.00	115.897	258.312	212.376	−182.048	22.968	−311.204	−292.023	−192.963	20.159
	600.00	117.989	279.627	221.857	−170.354	34.662	−338.130	−288.706	−173.462	15.101
	700.00	120.081	297.972	231.450	−158.451	46.565	−367.031	−285.321	−154.521	11.530
	800.00	122.173	314.143	240.796	−146.338	58.678	−397.653	−281.842	−136.071	8.885
	900.00	124.265	328.654	249.765	−134.016	71.000	−429.805	−278.254	−118.064	6.852

References

Phase	H / S	C_p
SOL	Nb1/e	e

CrN — CHROMIUM NITRIDE — 66.003

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	52.347	37.443	37.443	−117.152	0.000	−128.316	−117.152	−92.703	16.241
	300.00	51.392	37.760	37.444	−117.057	0.095	−128.385	−117.127	−92.552	16.115
	400.00	49.083	51.781	39.355	−112.182	4.970	−132.894	−116.139	−84.512	11.036
	500.00	49.746	62.805	42.981	−107.240	9.912	−138.643	−115.270	−76.708	8.014
	600.00	50.408	71.933	47.067	−102.233	14.919	−145.392	−114.506	−69.069	6.013
	700.00	51.070	79.753	51.191	−97.159	19.993	−152.986	−113.827	−61.551	4.593
	800.00	51.732	86.616	55.199	−92.019	25.133	−161.311	−113.217	−54.125	3.534
	900.00	52.393	92.747	59.036	−86.812	30.340	−170.285	−112.663	−46.773	2.715
	1000.00	53.055	98.301	62.689	−81.540	35.612	−179.841	−112.156	−39.480	2.062
	1100.00	53.717	103.389	66.161	−76.201	40.951	−189.929	−111.746	−32.233	1.531
	1200.00	54.378	108.091	69.462	−70.797	46.355	−200.506	−111.470	−25.017	1.089
	1300.00	55.040	112.470	72.604	−65.326	51.826	−211.537	−111.327	−17.820	0.716
	1400.00	55.702	116.573	75.599	−59.789	57.363	−222.991	−111.302	−10.628	0.397
	1500.00	56.363	120.439	78.461	−54.185	62.967	−234.844	−111.389	−3.435	0.120
	1555.00	56.727	122.475	79.982	−51.075	66.077	−241.524	−111.497	0.525	−0.018

References

Phase	H / S	C_p	Remarks
SOL	Ja1,e	Ja1	Ja1 NDPT= 1555. (Cr + N2)

Cr2N — DICHROMIUM NITRIDE — 117.999

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	66.026	64.852	64.852	−125.520	0.000	−144.856	−125.520	−102.195	17.904
	300.00	66.231	65.261	64.853	−125.398	0.122	−144.976	−125.511	−102.051	17.769
	400.00	73.428	85.449	67.557	−118.363	7.157	−152.543	−124.793	−94.329	12.318
	500.00	76.694	102.200	72.860	−110.850	14.670	−161.950	−123.954	−86.811	9.069
	600.00	79.520	116.435	78.965	−103.038	22.482	−172.899	−123.137	−79.459	6.918
	700.00	82.255	128.899	85.226	−94.949	30.571	−185.178	−122.317	−72.244	5.391
	800.00	84.982	140.061	91.395	−86.587	38.933	−198.636	−121.461	−65.148	4.254
	900.00	87.720	150.228	97.375	−77.952	47.568	−213.158	−120.542	−58.163	3.376
	1000.00	90.468	159.612	103.135	−69.043	56.477	−228.655	−119.543	−51.286	2.679
	1100.00	93.225	168.364	108.672	−59.858	65.662	−245.059	−118.568	−44.508	2.113
	1200.00	95.986	176.594	113.992	−50.398	75.122	−262.311	−117.691	−37.815	1.646
	1300.00	98.748	184.386	119.110	−40.661	84.859	−280.363	−116.913	−31.190	1.253
	1400.00	101.509	191.805	124.040	−30.648	94.872	−299.176	−116.206	−24.623	0.919
	1500.00	104.266	198.903	128.796	−20.360	105.160	−318.714	−115.564	−18.104	0.630
	1600.00	107.018	205.720	133.392	−9.795	115.725	−338.947	−115.045	−11.625	0.380
	1700.00	109.764	212.290	137.841	1.044	126.564	−359.849	−114.624	−5.174	0.159
	1800.00	112.502	218.642	142.154	12.157	137.677	−381.398	−114.264	1.253	−0.036
	1810.00	112.775	219.266	142.579	13.284	138.804	−383.587	−114.230	1.895	−0.055

References

Phase	H / S	C_p	Remarks
SOL	Ja1	Ja1	Ja1 NDPT= 1810. (Cr + N2)

196.899

2–CHROMIUM NIOBIUM

Cr2Nb

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL–B	298.15	73.068	83.680	83.680	–20.920	0.000	–45.869	–20.920	–20.920	3.665
	300.00	73.213	84.132	83.681	–20.785	0.135	–46.024	–20.917	–20.920	3.642
	400.00	79.170	106.084	86.634	–13.140	7.780	–55.574	–20.640	–20.959	2.737
	500.00	83.203	124.204	92.388	–5.012	15.908	–67.114	–20.285	–21.079	2.202
	600.00	86.480	139.671	99.011	3.476	24.396	–80.326	–19.909	–21.273	1.852
	700.00	89.399	153.224	105.807	12.272	33.192	–94.985	–19.510	–21.531	1.607
	800.00	92.127	165.342	112.505	21.350	42.270	–110.924	–19.073	–21.849	1.427
	900.00	94.745	176.345	118.996	30.694	51.614	–128.016	–18.587	–22.225	1.290
	1000.00	97.295	186.459	125.243	40.296	61.216	–146.163	–18.049	–22.657	1.184
	1100.00	99.799	195.850	131.240	50.151	71.071	–165.284	–17.571	–23.142	1.099
	1200.00	102.273	204.640	136.994	60.255	81.175	–185.313	–17.236	–23.665	1.030
	1300.00	104.725	212.923	142.519	70.605	91.525	–206.195	–17.050	–24.209	0.973
	1400.00	107.161	220.774	147.831	81.200	102.120	–227.883	–16.989	–24.763	0.924
	1500.00	109.586	228.250	152.945	92.037	112.957	–250.337	–17.051	–25.317	0.882

References

Phase	H / S	C_p	Remarks	
SOL–B	M2,Ku1	M2	Tk1	TPT= 1890., L= 9.87.kJ / MPT= 1995., L= 115.5 kJ

CrO[g] CHROMIUM MONOXIDE (GAS) 67.995

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	31.330	239.267	239.267	188.280	0.000	116.943	188.280	154.573	–27.081
	300.00	31.356	239.461	239.267	188.338	0.058	116.500	188.268	154.364	–26.877
	400.00	32.945	248.699	240.516	191.553	3.273	92.074	187.568	143.167	–18.696
	500.00	34.211	256.194	242.925	194.914	6.634	66.817	186.798	132.153	–13.806
	600.00	35.085	262.514	245.677	198.382	10.102	40.874	185.934	121.304	–10.560
	700.00	35.696	267.971	248.481	201.923	13.643	14.343	184.974	110.607	–8.254
	800.00	36.136	272.768	251.223	205.516	17.236	–12.699	183.922	100.054	–6.533
	900.00	36.466	277.044	253.859	209.146	20.866	–40.193	182.787	89.638	–5.202
	1000.00	36.722	280.900	256.373	212.806	24.526	–68.093	181.570	79.352	–4.145
	1100.00	36.926	284.410	258.765	216.489	28.209	–96.361	180.218	69.194	–3.286
	1200.00	37.094	287.630	261.038	220.190	31.910	–124.966	178.690	59.167	–2.575
	1300.00	37.235	290.605	263.199	223.907	35.627	–153.879	176.984	49.275	–1.980
	1400.00	37.358	293.369	265.257	227.637	39.357	–183.080	175.113	39.520	–1.475
	1500.00	37.466	295.950	267.218	231.378	43.098	–212.547	173.078	29.905	–1.041
	1600.00	37.564	298.371	269.090	235.130	46.850	–242.264	170.848	20.432	–0.667
	1700.00	37.653	300.651	270.880	238.890	50.610	–272.216	168.435	11.104	–0.341
	1800.00	37.736	302.806	272.595	242.660	54.380	–302.390	165.857	1.923	–0.056
	1900.00	37.815	304.848	274.239	246.438	58.158	–332.774	163.123	–7.111	0.195
	2000.00	37.889	306.790	275.818	250.223	61.943	–363.356	160.232	–15.996	0.418
	2100.00	37.961	308.640	277.337	254.015	65.735	–394.129	157.186	–24.734	0.615
	2200.00	38.031	310.408	278.801	257.815	69.535	–425.082	137.883	–32.779	0.778
	2300.00	38.100	312.100	280.212	261.622	73.342	–456.208	135.841	–40.490	0.920
	2400.00	38.168	313.723	281.575	265.435	77.155	–487.499	133.795	–48.113	1.047
	2500.00	38.234	315.282	282.892	269.255	80.975	–518.950	131.745	–55.651	1.163
	2600.00	38.301	316.783	284.167	273.082	84.802	–550.554	129.691	–63.106	1.268
	2700.00	38.367	318.230	285.402	276.915	88.635	–582.305	127.633	–70.482	1.364
	2800.00	38.434	319.626	286.599	280.755	92.475	–614.198	125.571	–77.782	1.451
	2900.00	38.501	320.976	287.762	284.602	96.322	–646.229	123.506	–85.008	1.531
	3000.00	38.568	322.282	288.891	288.455	100.175	–678.392	–222.484	–85.192	1.483

References

Phase	H / S	C_p
GAS	Ja1	Ja1

83.995

CHROMIUM DIOXIDE

CrO2

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	99.673	51.045	51.045	−597.894	0.000	−613.113	−597.894	−544.900	95.464
	300.00	99.705	51.661	51.047	−597.710	0.184	−613.208	−597.807	−544.572	94.818
	400.00	101.420	80.580	54.978	−587.653	10.241	−619.885	−593.151	−527.531	68.888
	500.00	103.136	103.395	62.458	−577.426	20.468	−629.123	−588.584	−511.656	53.452
	600.00	104.851	122.351	70.904	−567.026	30.868	−640.437	−584.096	−496.693	43.241

References

Phase	H / S	C_p
SOL	Nb1/e	e

83.995

CHROMIUM DIOXIDE (GAS)

CrO2[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	43.411	269.224	269.224	−75.312	0.000	−155.581	−75.312	−87.369	15.307
	300.00	43.462	269.493	269.225	−75.232	0.080	−156.080	−75.329	−87.443	15.225
	400.00	46.901	282.457	270.969	−70.717	4.595	−183.700	−76.214	−91.345	11.928
	500.00	49.779	293.250	274.376	−65.875	9.437	−212.500	−77.033	−95.033	9.928
	600.00	51.781	302.514	278.312	−60.790	14.522	−242.299	−77.860	−98.555	8.580
	700.00	53.172	310.607	282.360	−55.539	19.773	−272.964	−78.737	−101.936	7.607
	800.00	54.165	317.776	286.347	−50.169	25.143	−304.390	−79.680	−105.187	6.868
	900.00	54.895	324.200	290.202	−44.714	30.598	−336.494	−80.694	−108.315	6.286
	1000.00	55.447	330.013	293.897	−39.196	36.116	−369.209	−81.783	−111.327	5.815
	1100.00	55.874	335.319	297.425	−33.629	41.683	−402.480	−83.006	−114.223	5.424
	1200.00	56.212	340.196	300.789	−28.024	47.288	−436.259	−84.405	−117.001	5.093
	1300.00	56.485	344.706	303.996	−22.389	52.923	−470.507	−85.983	−119.654	4.808
	1400.00	56.710	348.901	307.055	−16.729	58.583	−505.190	−87.731	−122.180	4.559
	1500.00	56.897	352.820	309.977	−11.048	64.264	−540.278	−89.647	−124.574	4.338
	1600.00	57.055	356.497	312.771	−5.350	69.962	−575.746	−91.765	−126.835	4.141
	1700.00	57.190	359.960	315.446	0.362	75.674	−611.570	−94.072	−128.957	3.962
	1800.00	57.308	363.232	318.011	6.087	81.399	−647.731	−96.552	−130.939	3.800
	1900.00	57.410	366.334	320.473	11.823	87.135	−684.211	−99.198	−132.777	3.650
	2000.00	57.501	369.281	322.840	17.569	92.881	−720.993	−102.010	−134.473	3.512

References

Phase	H / S	C_p
GAS	Ja1	Ja1

CrO_3 CHROMIUM TRIOXIDE 99.994

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	69.338	73.220	73.220	–589.526	0.000	–611.357	–589.526	–512.562	89.799
	300.00	69.620	73.650	73.221	–589.397	0.129	–611.492	–589.522	–512.084	89.162
	400.00	80.289	95.315	76.103	–581.841	7.685	–619.967	–588.851	–486.351	63.511
	471.00	84.875	108.818	80.035	–575.969	13.557	–627.222	–588.053	–468.222	51.927
			30.204		14.226					
LIQ	471.00	125.520	139.022	80.035	–561.743	27.783	–627.222	–573.827	–468.222	51.927
	500.00	125.520	146.522	83.676	–558.103	31.423	–631.364	–572.304	–461.766	48.240
	600.00	125.520	169.407	96.115	–545.551	43.975	–647.195	–567.243	–440.138	38.317

References

Phase	H / S	C_p
SOL	Nb1/Tk1	Ku1
LIQ	Ku1	Ku1

99.994

CHROMIUM TRIOXIDE (GAS) **CrO3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	56.030	266.170	266.170	−292.880	0.000	−372.239	−292.880	−273.444	47.906
	300.00	56.187	266.517	266.171	−292.776	0.104	−372.731	−292.901	−273.323	47.590
	400.00	63.827	283.781	268.473	−286.757	6.123	−400.269	−293.767	−266.653	34.821
	500.00	69.061	298.626	273.055	−280.094	12.786	−429.407	−294.295	−259.809	27.142
	600.00	72.535	311.545	278.417	−273.003	19.877	−459.930	−294.695	−252.873	22.015
	700.00	74.933	322.917	283.978	−265.623	27.257	−491.665	−295.070	−245.874	18.347
	800.00	76.667	333.042	289.490	−258.038	34.842	−524.472	−295.467	−238.819	15.593
	900.00	77.896	342.146	294.844	−250.308	42.572	−558.239	−295.908	−231.712	13.448
	1000.00	78.819	350.404	299.993	−242.470	50.410	−592.873	−296.408	−224.553	11.729
	1100.00	79.522	357.950	304.924	−234.551	58.329	−628.296	−297.034	−217.338	10.321
	1200.00	80.069	364.894	309.636	−226.570	66.310	−664.443	−297.831	−210.059	9.144
	1300.00	80.502	371.321	314.137	−218.541	74.339	−701.258	−298.807	−202.707	8.145
	1400.00	80.852	377.300	318.438	−210.473	82.407	−738.693	−299.953	−195.272	7.286
	1500.00	81.137	382.888	322.550	−202.373	90.507	−776.705	−301.271	−187.750	6.538
	1600.00	81.373	388.132	326.487	−194.247	98.633	−815.259	−302.794	−180.134	5.881
	1700.00	81.570	393.072	330.260	−186.100	106.780	−854.321	−304.512	−172.416	5.298
	1800.00	81.736	397.739	333.880	−177.934	114.946	−893.864	−306.410	−164.592	4.776
	1900.00	81.878	402.162	337.358	−169.753	123.127	−933.861	−308.481	−156.657	4.307
	2000.00	81.999	406.365	340.705	−161.559	131.321	−974.289	−310.726	−148.609	3.881
	2100.00	82.104	410.368	343.927	−153.354	139.526	−1015.127	−313.145	−140.444	3.493
	2200.00	82.195	414.190	347.035	−145.139	147.741	−1056.357	−331.840	−131.617	3.125
	2300.00	82.275	417.845	350.035	−136.915	155.965	−1097.960	−333.295	−122.484	2.782
	2400.00	82.345	421.349	352.934	−128.684	164.196	−1139.921	−334.776	−113.287	2.466
	2500.00	82.407	424.711	355.738	−120.447	172.433	−1182.225	−336.284	−104.027	2.174
	2600.00	82.461	427.944	358.453	−112.203	180.677	−1224.859	−337.818	−94.706	1.903
	2700.00	82.510	431.057	361.085	−103.954	188.926	−1267.810	−339.378	−85.326	1.651
	2800.00	82.553	434.059	363.638	−95.701	197.179	−1311.066	−340.964	−75.888	1.416
	2900.00	82.592	436.957	366.117	−87.444	205.436	−1354.618	−342.577	−66.393	1.196
	3000.00	82.627	439.757	368.525	−79.183	213.697	−1398.454	−688.135	−49.871	0.868

References

Phase	H / S	C_p
GAS	Ja1	Ja1

Cr2O3 DICHROMIUM TRIOXIDE 151.990

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	120.361	81.199	81.199	−1139.701	0.000	−1163.910	−1139.701	−1058.067	185.369
	300.00	121.922	81.948	81.201	−1139.477	0.224	−1164.061	−1139.645	−1057.561	184.138
	400.00	112.675	116.458	85.988	−1127.513	12.188	−1174.096	−1136.995	−1030.649	134.589
	500.00	117.701	142.205	94.734	−1115.965	23.736	−1187.068	−1135.241	−1004.265	104.915
	600.00	120.580	163.938	104.505	−1104.041	35.660	−1202.404	−1133.559	−978.230	85.162
	700.00	122.626	182.686	114.365	−1091.877	47.824	−1219.757	−1132.024	−952.465	71.074
	800.00	124.278	199.171	123.956	−1079.529	60.172	−1238.866	−1130.633	−926.911	60.521
	900.00	125.711	213.893	133.146	−1067.028	72.673	−1259.532	−1129.368	−901.522	52.323
	1000.00	127.007	227.206	141.897	−1054.391	85.310	−1281.598	−1128.215	−876.269	45.772
	1100.00	128.208	239.368	150.213	−1041.630	98.071	−1304.935	−1127.278	−851.122	40.416
	1200.00	129.339	250.573	158.115	−1028.752	110.949	−1329.439	−1126.633	−826.048	35.957
	1300.00	130.419	260.968	165.632	−1015.764	123.937	−1355.023	−1126.281	−801.016	32.185
	1400.00	131.462	270.672	172.792	−1002.670	137.031	−1381.610	−1126.195	−776.000	28.953
	1500.00	132.478	279.777	179.624	−989.472	150.229	−1409.137	−1126.372	−750.982	26.152
	1600.00	133.478	288.358	186.154	−976.175	163.526	−1437.548	−1126.870	−725.941	23.700
	1700.00	134.471	296.480	192.407	−962.777	176.924	−1466.794	−1127.667	−700.860	21.535
	1800.00	135.466	304.195	198.405	−949.280	190.421	−1496.830	−1128.722	−675.725	19.609
	1900.00	136.868	311.556	204.168	−935.665	204.036	−1527.621	−1130.000	−650.524	17.884
	2000.00	138.068	318.608	209.715	−921.916	217.785	−1559.131	−1131.485	−625.251	16.330
	2100.00	139.046	325.369	215.063	−908.058	231.643	−1591.333	−1133.198	−599.898	14.922
	2200.00	139.911	331.857	220.225	−894.110	245.591	−1624.196	−1167.359	−573.372	13.614
	2300.00	140.767	338.095	225.215	−880.076	259.625	−1657.696	−1166.937	−546.382	12.409
	2400.00	141.667	344.105	230.044	−865.955	273.746	−1691.807	−1166.460	−519.411	11.305
	2500.00	142.597	349.907	234.723	−851.742	287.959	−1726.510	−1165.925	−492.462	10.289
	2600.00	143.466	355.517	239.262	−837.438	302.263	−1761.782	−1165.331	−465.535	9.353
	2603.00	143.490	355.683	239.396	−837.007	302.694	−1762.849	−1165.313	−464.727	9.326
			49.829		129.704					
LIQ	2603.00	156.900	405.511	239.396	−707.303	432.398	−1762.849	−1135.609	−464.727	9.326
	2700.00	156.900	411.252	245.468	−692.084	447.617	−1802.464	−1033.719	−443.488	8.580
	2800.00	156.900	416.958	251.491	−676.394	463.307	−1843.876	−1031.802	−421.663	7.866
	2900.00	156.900	422.464	257.292	−660.704	478.997	−1885.849	−1029.915	−399.906	7.203
	3000.00	156.900	427.783	262.887	−645.014	494.687	−1928.363	−1715.899	−364.271	6.343

References

Phase	H / S	C_p
SOL	Nb1	Ja1
LIQ	Ja1	Ja1

154.900

CHROMIUM DICHLORIDE DIOXIDE (GAS) **CrO2Cl2**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	84.251	329.809	329.809	−538.062	0.000	−636.394	−538.062	−501.659	87.889
	300.00	84.526	330.331	329.810	−537.906	0.156	−637.005	−538.066	−501.434	87.307
	400.00	94.187	356.169	333.267	−528.901	9.161	−671.369	−537.929	−489.228	63.887
	500.00	98.659	377.723	340.067	−519.234	18.828	−708.095	−537.494	−477.101	49.842
	600.00	101.088	395.945	347.901	−509.236	28.826	−746.803	−537.041	−465.065	40.488
	700.00	102.552	411.646	355.912	−499.048	39.014	−787.201	−536.659	−453.101	33.811
	800.00	103.503	425.407	363.757	−488.742	49.320	−829.068	−536.371	−441.185	28.806
	900.00	104.155	437.637	371.299	−478.357	59.705	−872.231	−536.181	−429.299	24.916
	1000.00	104.621	448.637	378.492	−467.917	70.145	−916.554	−536.090	−417.429	21.804
	1100.00	104.966	458.625	385.330	−457.437	80.625	−961.925	−536.153	−405.561	19.258
	1200.00	105.228	467.770	391.824	−446.927	91.135	−1008.251	−536.410	−393.679	17.136
	1300.00	105.432	476.201	397.995	−436.393	101.669	−1055.455	−536.864	−381.768	15.340
	1400.00	105.594	484.021	403.863	−425.842	112.220	−1103.471	−537.501	−369.815	13.798
	1500.00	105.725	491.311	409.453	−415.276	122.786	−1152.242	−538.320	−357.810	12.460

References

Phase	H / S	C_p
GAS	Nb1	Nb1,e

Cr2FeO4 DICHROMIUM IRON TETRAOXIDE 223.837

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	133.679	141.963	141.963	–1458.124	0.000	–1500.450	–1458.124	–1355.891	237.547
	300.00	134.161	142.792	141.966	–1457.876	0.248	–1500.714	–1458.118	–1355.257	235.971
	400.00	151.894	184.135	147.482	–1443.463	14.661	–1517.117	–1457.130	–1321.091	172.517
	500.00	161.302	219.129	158.407	–1427.763	30.361	–1537.328	–1455.605	–1287.254	134.478
	600.00	167.433	249.112	171.087	–1411.309	46.815	–1560.776	–1454.061	–1253.730	109.147
	700.00	172.016	275.280	184.142	–1394.327	63.797	–1587.023	–1452.666	–1220.455	91.071
	800.00	175.776	298.502	197.013	–1376.933	81.191	–1615.734	–1451.513	–1187.364	77.527
	900.00	179.055	319.398	209.469	–1359.188	98.936	–1646.646	–1450.738	–1154.397	66.999
	1000.00	182.037	338.420	221.427	–1341.131	116.993	–1679.551	–1450.672	–1121.483	58.580
	1100.00	184.825	355.902	232.868	–1322.787	135.337	–1714.279	–1451.456	–1088.513	51.689
	1200.00	187.480	372.099	243.804	–1304.171	153.953	–1750.689	–1451.976	–1055.516	45.945
	1300.00	190.042	387.207	254.260	–1285.294	172.830	–1788.663	–1450.971	–1022.520	41.085
	1400.00	192.536	401.382	264.268	–1266.165	191.959	–1828.099	–1450.184	–989.593	36.922
	1500.00	194.980	414.749	273.859	–1246.788	211.336	–1868.912	–1449.613	–956.715	33.316
	1600.00	197.386	427.410	283.063	–1227.170	230.954	–1911.025	–1449.319	–923.866	30.161
	1700.00	199.762	439.448	291.911	–1207.312	250.812	–1954.373	–1450.229	–891.009	27.377
	1800.00	202.116	450.932	300.429	–1187.218	270.906	–1998.897	–1450.742	–858.100	24.901
	1900.00	204.451	461.923	308.642	–1166.890	291.234	–2044.543	–1465.555	–824.455	22.666
	2000.00	206.771	472.469	316.571	–1146.328	311.796	–2091.266	–1466.712	–790.683	20.651
	2100.00	209.080	482.613	324.238	–1125.536	332.588	–2139.024	–1467.984	–756.851	18.826
	2123.00	209.609	484.894	325.966	–1120.721	337.403	–2150.150	–1468.292	–749.061	18.430

References

Phase	H / S	C_p	Remarks	
SOL	Tk1	e	Tk1	MPT= 2123.

192.295 DICHROMIUM MAGNESIUM TETRAOXIDE **Cr2MgO4**

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	126.772	106.018	106.018	–1784.058	0.000	–1815.667	–1784.058	–1669.499	292.489
	300.00	127.354	106.804	106.021	–1783.823	0.235	–1815.864	–1784.064	–1668.788	290.562
	400.00	148.332	146.716	111.320	–1769.899	14.159	–1828.586	–1783.491	–1630.409	212.910
	500.00	158.842	181.057	121.922	–1754.491	29.567	–1845.019	–1782.074	–1592.295	166.346
	600.00	165.232	210.623	134.300	–1738.265	45.793	–1864.638	–1780.457	–1554.490	135.330
	700.00	169.676	236.445	147.087	–1721.508	62.550	–1887.019	–1778.862	–1516.956	113.197
	800.00	173.083	259.333	159.714	–1704.364	79.694	–1911.830	–1777.365	–1479.644	96.611
	900.00	175.887	279.885	171.944	–1686.911	97.147	–1938.808	–1775.990	–1442.513	83.721
	1000.00	178.317	298.545	183.686	–1669.198	114.860	–1967.744	–1783.699	–1404.770	73.378
	1100.00	180.502	315.645	194.915	–1651.256	132.802	–1998.465	–1782.599	–1366.932	64.910
	1200.00	182.521	331.438	205.643	–1633.104	150.954	–2030.829	–1781.717	–1329.185	57.858
	1300.00	184.422	346.123	215.891	–1614.756	169.302	–2064.716	–1781.060	–1291.502	51.893
	1400.00	186.239	359.857	225.689	–1596.222	187.836	–2100.022	–1907.569	–1250.234	46.647
	1500.00	187.992	372.767	235.068	–1577.510	206.548	–2136.660	–1906.130	–1203.333	41.904
	1600.00	189.697	384.954	244.058	–1558.625	225.433	–2174.551	–1904.954	–1156.519	37.756
	1700.00	191.365	396.504	252.689	–1539.572	244.486	–2213.629	–1904.019	–1109.772	34.099
	1800.00	193.005	407.489	260.986	–1520.353	263.705	–2253.833	–1903.289	–1063.073	30.850
	1900.00	194.621	417.968	268.975	–1500.971	283.087	–2295.110	–1902.750	–1016.410	27.943
	2000.00	196.219	427.991	276.677	–1481.429	302.629	–2337.412	–1902.402	–969.771	25.328
	2100.00	197.802	437.603	284.113	–1461.728	322.330	–2380.695	–1902.242	–923.144	22.962
	2200.00	199.372	446.841	291.301	–1441.869	342.189	–2424.920	–1934.475	–875.434	20.785
	2300.00	200.932	455.738	298.258	–1421.854	362.204	–2470.052	–1932.065	–827.349	18.790
	2400.00	202.483	464.322	305.000	–1401.683	382.375	–2516.057	–1929.544	–779.372	16.963
	2500.00	204.027	472.619	311.539	–1381.358	402.700	–2562.907	–1926.913	–731.502	15.284
	2600.00	205.565	480.652	317.890	–1360.878	423.180	–2610.572	–1924.170	–683.739	13.736
	2623.00	205.918	482.464	319.325	–1356.146	427.912	–2621.648	–1923.524	–672.769	13.398

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	Ku1,e	Ku1	MPT = 2623.

CrNaO2 — CHROMIUM SODIUM DIOXIDE — 106.985

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	89.400	77.404	77.404	−818.662	0.000	−841.740	−818.662	−758.186	132.831
	300.00	89.547	77.957	77.406	−818.496	0.166	−841.884	−818.646	−757.811	131.947
	400.00	95.223	104.582	80.997	−809.228	9.434	−851.061	−820.399	−737.460	96.302
	500.00	98.659	126.223	87.946	−799.523	19.139	−862.635	−819.457	−716.831	74.887
	600.00	101.213	144.445	95.884	−789.525	29.137	−876.192	−818.386	−696.404	60.627
	700.00	103.352	160.212	103.972	−779.294	39.368	−891.443	−817.236	−676.164	50.456
	800.00	105.268	174.139	111.889	−768.862	49.800	−908.173	−816.025	−656.093	42.838
	900.00	107.056	186.642	119.512	−758.245	60.417	−926.223	−814.764	−636.177	36.923
	1000.00	108.763	198.011	126.802	−747.454	71.208	−945.464	−813.468	−616.403	32.198
	1100.00	110.418	208.455	133.757	−736.494	82.168	−965.794	−812.206	−596.758	28.338

References

Phase	H / S	C_p
SOL	Tk1	e

Cr2NiO4 — DICHROMIUM NICKEL TETRAOXIDE — 226.680

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	148.802	119.244	119.244	−1381.557	0.000	−1417.110	−1381.557	−1271.777	222.810
	300.00	149.127	120.165	119.247	−1381.281	0.276	−1417.331	−1381.525	−1271.096	221.318
	400.00	161.144	164.923	125.268	−1365.695	15.862	−1431.664	−1379.470	−1234.584	161.220
	500.00	167.665	201.641	136.983	−1349.228	32.329	−1450.048	−1377.282	−1198.618	125.219
	600.00	172.024	232.616	150.408	−1332.232	49.325	−1471.802	−1375.380	−1163.071	101.254
	700.00	175.362	259.394	164.108	−1314.857	66.700	−1496.432	−1373.579	−1127.820	84.159
	800.00	178.155	282.997	177.522	−1297.177	84.380	−1523.575	−1371.618	−1092.847	71.356
	900.00	180.632	304.126	190.436	−1279.236	102.321	−1552.949	−1369.765	−1058.113	61.411
	1000.00	182.912	323.277	202.777	−1261.058	120.499	−1584.334	−1368.049	−1023.579	53.466
	1100.00	185.064	340.812	214.540	−1242.658	138.899	−1617.551	−1366.573	−989.206	46.973
	1200.00	187.128	357.004	225.746	−1224.048	157.509	−1652.452	−1365.411	−954.953	41.568
	1300.00	189.131	372.061	236.428	−1205.234	176.323	−1688.914	−1364.558	−920.785	36.998
	1400.00	191.089	386.149	246.625	−1186.223	195.334	−1726.832	−1363.962	−886.673	33.082
	1500.00	193.014	399.399	256.373	−1167.018	214.539	−1766.116	−1363.570	−852.595	29.690

References

Phase	H / S	C_p	Remarks	
SOL	Tk1	e	Tk1	TPT= 300.65

84.062 CHROMIUM MONOSULFIDE **CrS**

Phase	T	C_p	S	-(G-H298)/T	H	H-H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[-]
SOL-1	298.15	46.775	64.015	64.015	-155.645	0.000	-174.731	-155.645	-158.125	27.703
	300.00	46.861	64.305	64.016	-155.558	0.087	-174.850	-155.644	-158.141	27.535
	400.00	51.533	78.426	65.910	-150.639	5.006	-182.009	-157.734	-158.900	20.750
	450.00	53.870	84.630	67.650	-148.004	7.641	-186.087	-158.218	-159.026	18.459
			0.529		0.238					
SOL-2	450.00	53.850	85.159	67.650	-147.766	7.879	-186.087	-157.980	-159.026	18.459
	500.00	54.095	90.846	69.690	-145.067	10.578	-190.490	-158.667	-159.104	16.621
	600.00	54.585	100.752	74.065	-139.633	16.012	-200.084	-159.560	-159.100	13.851
	700.00	55.076	109.203	78.496	-134.150	21.495	-210.592	-160.261	-158.968	11.862
	800.00	55.566	116.589	82.805	-128.618	27.027	-221.889	-161.064	-158.731	10.364
	900.00	56.056	123.162	86.931	-123.037	32.608	-233.883	-214.753	-157.232	9.126
	1000.00	56.547	129.094	90.855	-117.407	38.238	-246.500	-214.104	-150.877	7.881
	1100.00	57.037	134.506	94.581	-111.727	43.918	-259.684	-213.547	-144.582	6.866
	1200.00	57.527	139.490	98.119	-105.999	49.646	-273.387	-213.122	-138.332	6.021
	1300.00	58.018	144.114	101.481	-100.222	55.423	-287.570	-212.830	-132.112	5.308
	1400.00	58.508	148.432	104.682	-94.396	61.249	-302.200	-212.657	-125.910	4.698
	1500.00	58.999	152.485	107.735	-88.520	67.125	-317.248	-212.601	-119.717	4.169
	1600.00	59.489	156.308	110.653	-82.596	73.049	-332.689	-212.693	-113.522	3.706
	1700.00	59.979	159.930	113.446	-76.622	79.023	-348.503	-212.920	-107.318	3.297
	1800.00	60.470	163.372	116.125	-70.600	85.045	-364.669	-213.263	-101.097	2.934
	1840.00	60.666	164.703	117.166	-68.177	87.468	-371.231	-213.431	-98.602	2.799

References

Phase	H / S	C_p	Remarks	
SOL-1	Ku1/Mi1	Mi1,e	Mi1	TPT= 450. (lamda-tr.), L= 0.24 kJ
SOL-2	Mi1,e	Mi1	Mi1	MPT= 1840.

CrS1.17 CHROMIUM 1.17–SULFIDE 89.513

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL–A	298.15	60.501	69.873	69.873	–165.268	0.000	–186.101	–165.268	–167.870	29.410
	300.00	60.501	70.247	69.874	–165.156	0.112	–186.230	–165.249	–167.886	29.232
	301.00	60.501	70.448	69.876	–165.096	0.172	–186.301	–165.238	–167.895	29.136
			0.249		0.075					
SOL–B	301.00	54.483	70.698	69.876	–165.021	0.247	–186.301	–165.163	–167.895	29.136
	400.00	55.229	86.291	72.096	–159.590	5.678	–194.106	–167.471	–168.740	22.035
	500.00	55.982	98.696	76.219	–154.029	11.239	–203.377	–169.079	–168.900	17.645
	590.00	56.660	108.016	80.376	–148.960	16.308	–212.690	–170.268	–168.760	14.941
			0.461		0.272					
SOL–C	590.00	56.660	108.477	80.376	–148.688	16.580	–212.690	–169.996	–168.760	14.941
	600.00	56.735	109.430	80.853	–148.121	17.147	–213.780	–170.106	–168.738	14.690
	700.00	57.488	118.233	85.579	–142.410	22.858	–225.173	–171.141	–168.428	12.568
	800.00	58.241	125.958	90.153	–136.624	28.644	–237.390	–172.261	–167.966	10.967
	900.00	58.994	132.861	94.522	–130.762	34.506	–250.337	–235.225	–166.008	9.635
	1000.00	59.748	139.116	98.673	–124.825	40.443	–263.941	–234.580	–158.353	8.271
	1100.00	60.501	144.846	102.614	–118.813	46.455	–278.143	–234.004	–150.758	7.159
	1200.00	61.254	150.143	106.357	–112.725	52.543	–292.896	–233.533	–143.212	6.234
	1300.00	62.007	155.075	109.917	–106.562	58.706	–308.160	–233.170	–135.701	5.453
	1400.00	62.760	159.698	113.309	–100.323	64.945	–323.901	–232.901	–128.214	4.784
	1500.00	63.513	164.054	116.548	–94.010	71.258	–340.090	–232.724	–120.743	4.205

References

Phase	H / S	C_p
SOL–A	Mi1	Mi1
SOL–B	Mi1	Mi1
SOL–C	Mi1	Mi1

Cr2(SO4)3 CHROMIUM SULFATE 392.183

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	281.374	258.780	258.780	–2949.720	0.000	–3026.875	–2949.720	–2617.119	458.508
	300.00	282.243	260.524	258.786	–2949.199	0.521	–3027.356	–2949.738	–2615.055	455.322
	400.00	325.781	347.845	270.397	–2918.741	30.979	–3057.879	–2955.707	–2503.246	326.890
	500.00	362.514	424.614	293.712	–2884.269	65.451	–3096.576	–2956.501	–2390.051	249.687
	600.00	392.441	493.456	321.364	–2846.465	103.255	–3142.539	–2953.884	–2276.946	198.226
	700.00	415.562	555.775	350.472	–2806.008	143.712	–3195.050	–2948.632	–2164.513	161.518
	800.00	431.879	612.407	379.730	–2763.579	186.141	–3253.504	–2942.256	–2052.925	134.042
	900.00	441.389	663.890	408.489	–2719.859	229.861	–3317.360	–3093.715	–1938.710	112.520

References

Phase	H / S	C_p
SOL	Pa3	Pa3

80.082 CHROMIUM SILICON **CrSi**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	45.154	44.794	44.794	−71.128	0.000	−84.483	−71.128	−71.824	12.583
	300.00	45.286	45.074	44.795	−71.044	0.084	−84.566	−71.125	−71.828	12.506
	400.00	50.249	58.866	46.642	−66.238	4.890	−89.785	−70.870	−72.099	9.415
	500.00	53.015	70.399	50.272	−61.065	10.063	−96.264	−70.577	−72.440	7.568
	600.00	54.918	80.241	54.467	−55.663	15.465	−103.808	−70.304	−72.838	6.341
	700.00	56.412	88.823	58.775	−50.094	21.034	−112.271	−70.058	−73.281	5.468
	800.00	57.689	96.441	63.016	−44.388	26.740	−121.541	−69.836	−73.756	4.816
	900.00	58.839	103.303	67.117	−38.561	32.567	−131.534	−69.633	−74.259	4.310
	1000.00	59.911	109.558	71.053	−32.623	38.505	−142.181	−69.450	−74.783	3.906
	1100.00	60.931	115.317	74.819	−26.580	44.548	−153.429	−69.344	−75.322	3.577
	1200.00	61.917	120.661	78.419	−20.438	50.690	−165.231	−69.355	−75.866	3.302
	1300.00	62.877	125.655	81.862	−14.198	56.930	−177.549	−69.488	−76.404	3.070
	1400.00	63.820	130.349	85.160	−7.863	63.265	−190.352	−69.731	−76.928	2.870
	1500.00	64.750	134.784	88.322	−1.434	69.694	−203.610	−70.083	−77.430	2.696
	1600.00	65.670	138.992	91.358	5.087	76.215	−217.301	−70.575	−77.905	2.543
	1700.00	66.582	143.001	94.279	11.699	82.827	−231.402	−121.374	−77.898	2.394

References

Phase	H / S	C_p	Remarks	
SOL	Tk1	Tk1,C1	Tk1	DPT= 1723. (peritec.)

108.167 CHROMIUM 2−SILICON **CrSi2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	55.696	55.647	55.647	−100.416	0.000	−117.007	−100.416	−98.737	17.298
	300.00	55.845	55.992	55.648	−100.313	0.103	−117.110	−100.430	−98.726	17.190
	400.00	61.879	72.962	57.921	−94.400	6.016	−123.584	−101.190	−98.044	12.803
	500.00	65.881	87.222	62.393	−88.002	12.414	−131.613	−101.953	−97.169	10.151
	600.00	69.083	99.524	67.580	−81.249	19.167	−140.964	−102.705	−96.141	8.370
	700.00	71.908	110.389	72.934	−74.197	26.219	−151.470	−103.425	−94.990	7.088
	800.00	74.531	120.164	78.237	−66.874	33.542	−163.005	−104.095	−93.739	6.121
	900.00	77.037	129.088	83.398	−59.295	41.121	−175.474	−104.701	−92.407	5.363
	1000.00	79.471	137.331	88.384	−51.469	48.947	−188.800	−105.240	−91.012	4.754
	1100.00	81.857	145.018	93.187	−43.403	57.013	−202.922	−105.764	−89.564	4.253
	1200.00	84.211	152.241	97.810	−35.099	65.317	−217.789	−106.313	−88.067	3.833
	1300.00	86.542	159.074	102.263	−26.561	73.855	−233.357	−106.890	−86.523	3.477
	1400.00	88.856	165.572	106.554	−17.791	82.625	−249.592	−107.482	−84.934	3.169
	1500.00	91.158	171.781	110.697	−8.790	91.626	−266.462	−108.087	−83.303	2.901
	1600.00	93.451	177.738	114.703	0.440	100.856	−283.940	−108.735	−81.629	2.665
	1700.00	95.737	183.472	118.580	9.900	110.316	−302.002	−209.771	−79.021	2.428
	1733.00	96.490	185.320	119.833	13.071	113.487	−308.087	−209.858	−76.482	2.305

References

Phase	H / S	C_p	Remarks	
SOL	Tk1	Tk1,e	Tk1	MPT= 1733.

Cr3Si — 3–CHROMIUM SILICON — 184.074

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	90.625	86.609	86.609	–138.072	0.000	–163.894	–138.072	–137.139	24.026
	300.00	90.763	87.170	86.611	–137.904	0.168	–164.055	–138.071	–137.133	23.877
	400.00	97.101	114.192	90.252	–128.496	9.576	–174.173	–138.071	–136.824	17.867
	500.00	102.312	136.431	97.327	–118.520	19.552	–186.736	–138.181	–136.501	14.260
	600.00	107.079	155.511	105.471	–108.048	30.024	–201.354	–138.340	–136.150	11.853
	700.00	111.637	172.361	113.846	–97.111	40.961	–217.764	–138.474	–135.774	10.132
	800.00	116.082	187.559	122.125	–85.724	52.348	–235.772	–138.523	–135.384	8.840
	900.00	120.463	201.485	130.179	–73.897	64.175	–255.234	–138.447	–134.994	7.835
	1000.00	124.804	214.402	137.963	–61.633	76.439	–276.035	–138.230	–134.621	7.032
	1100.00	129.118	226.500	145.468	–48.937	89.135	–298.087	–138.030	–134.271	6.376
	1200.00	133.414	237.919	152.701	–35.810	102.262	–321.313	–137.966	–133.933	5.830
	1300.00	137.698	248.767	159.677	–22.254	115.818	–345.652	–138.045	–133.595	5.368
	1400.00	141.972	259.128	166.413	–8.271	129.801	–371.050	–138.228	–133.246	4.971
	1500.00	146.240	269.069	172.927	6.140	144.212	–397.463	–138.511	–132.881	4.627
	1600.00	150.502	278.643	179.237	20.977	159.049	–424.852	–138.983	–132.492	4.325
	1700.00	154.761	287.895	185.358	36.240	174.312	–453.181	–189.787	–131.621	4.044
	1800.00	159.016	296.861	191.305	51.929	190.001	–482.421	–190.285	–128.185	3.720
	1900.00	163.269	305.573	197.091	68.043	206.115	–512.545	–190.817	–124.721	3.429
	2000.00	167.520	314.055	202.728	84.583	222.655	–543.528	–191.382	–121.228	3.166
	2023.00	168.497	315.976	204.005	88.447	226.519	–550.773	–191.517	–120.420	3.109

References

Phase	H / S	C_p	Remarks	
SOL	Tk1	Tk1,e	Tk1	MPT= 2023.

344.237 5–CHROMIUM 3–SILICON **Cr5Si3**

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	184.421	182.422	182.422	–326.352	0.000	–380.741	–326.352	–328.667	57.581
	300.00	184.866	183.565	182.426	–326.010	0.342	–381.080	–326.338	–328.682	57.229
	400.00	202.242	239.383	189.919	–306.566	19.786	–402.319	–325.404	–329.599	43.041
	500.00	212.932	285.732	204.579	–285.775	40.577	–428.642	–324.462	–330.758	34.554
	600.00	220.991	325.293	221.481	–264.065	62.287	–459.241	–323.639	–332.097	28.912
	700.00	227.806	359.882	238.833	–241.618	84.734	–493.535	–322.908	–333.565	24.891
	800.00	233.960	390.708	255.925	–218.526	107.826	–531.092	–322.220	–335.135	21.882
	900.00	239.728	418.600	272.475	–194.839	131.513	–571.579	–321.534	–336.790	19.547
	1000.00	245.258	444.146	288.382	–170.588	155.764	–614.734	–320.839	–338.523	17.683
	1100.00	250.631	467.775	303.630	–145.792	180.560	–660.345	–320.411	–340.316	16.160
	1200.00	255.898	489.809	318.237	–120.465	205.887	–708.236	–320.455	–342.127	14.892
	1300.00	261.089	510.497	332.238	–94.615	231.737	–758.262	–320.985	–343.915	13.819
	1400.00	268.671	530.133	345.678	–68.115	258.237	–810.301	–321.807	–345.650	12.896
	1500.00	279.763	549.022	358.608	–40.731	285.621	–864.263	–322.678	–347.321	12.095
	1600.00	295.365	567.551	371.088	–12.012	314.340	–920.094	–323.296	–348.941	11.392
	1700.00	315.478	586.038	383.188	18.493	344.845	–977.772	–473.681	–349.203	10.730
	1800.00	340.101	604.746	394.976	51.234	377.586	–1037.309	–471.544	–341.934	9.923
	1900.00	369.234	623.894	406.518	86.663	413.015	–1098.736	–467.486	–334.834	9.205
	1923.00	376.572	628.381	409.145	95.240	421.592	–1113.137	–466.232	–333.236	9.052

References

Phase	H / S	C_p	Remarks
SOL	Tk1	Tk1,C1	Tk1,C1 MPT= 1923.

Cr2Ta — 2–CHROMIUM TANTALUM — 284.940

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	72.551	88.073	88.073	–26.987	0.000	–53.246	–26.987	–26.775	4.691
	300.00	72.692	88.522	88.075	–26.853	0.134	–53.409	–26.986	–26.774	4.662
	400.00	78.471	110.298	91.004	–19.269	7.718	–63.389	–26.836	–26.721	3.489
	500.00	82.370	128.247	96.710	–11.218	15.769	–75.342	–26.606	–26.719	2.791
	600.00	85.530	143.552	103.273	–2.819	24.168	–88.951	–26.348	–26.765	2.330
	700.00	88.341	156.951	110.003	5.876	32.863	–103.989	–26.063	–26.857	2.004
	800.00	90.965	168.920	116.633	14.843	41.830	–120.293	–25.735	–26.992	1.762
	900.00	93.482	179.780	123.055	24.066	51.053	–137.736	–25.351	–27.171	1.577
	1000.00	95.931	189.757	129.233	33.537	60.524	–156.220	–24.907	–27.397	1.431
	1100.00	98.336	199.013	135.161	43.250	70.237	–175.664	–24.516	–27.666	1.314
	1200.00	100.711	207.671	140.846	53.203	80.190	–196.003	–24.258	–27.965	1.217
	1300.00	103.065	215.826	146.303	63.392	90.379	–217.181	–24.150	–28.279	1.136
	1400.00	105.404	223.549	151.547	73.816	100.803	–239.153	–24.168	–28.597	1.067
	1500.00	107.732	230.901	156.594	84.472	111.459	–261.879	–24.311	–28.909	1.007
	1600.00	110.051	237.928	161.460	95.362	122.349	–285.323	–24.642	–29.206	0.953
	1700.00	112.363	244.669	166.158	106.482	133.469	–309.455	–25.137	–29.477	0.906

References

Phase	H / S	C_p	Remarks
SOL	M2	M2	Hu1 MPT= 2300. (approx.)

Cs — CESIUM — 132.905

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	32.196	85.147	85.147	0.000	0.000	–25.387	0.000	0.000	0.000
	300.00	32.355	85.347	85.148	0.060	0.060	–25.544	0.000	0.000	0.000
	301.55	32.489	85.514	85.149	0.110	0.110	–25.677	0.000	0.000	0.000
			6.921		2.087					
LIQ	301.55	32.390	92.435	85.149	2.197	2.197	–25.677	0.000	0.000	0.000
	400.00	31.518	101.449	88.109	5.336	5.336	–35.244	0.000	0.000	0.000
	500.00	31.152	108.437	91.503	8.467	8.467	–45.751	0.000	0.000	0.000
	600.00	30.995	114.101	94.812	11.573	11.573	–56.887	0.000	0.000	0.000
	700.00	30.936	118.874	97.917	14.669	14.669	–68.542	0.000	0.000	0.000
	800.00	30.945	123.006	100.801	17.764	17.764	–80.641	0.000	0.000	0.000
	900.00	30.945	126.651	103.475	20.858	20.858	–93.127	0.000	0.000	0.000
	947.97	30.945	128.257	104.688	22.343	22.343	–99.241	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks
SOL	Ja2	Ja1	
LIQ	Ja2	Ja1	Ja2 BPT= 947.967, L= 67.659 kJ, GAS (Cs)

132.905

CESIUM (GAS)

Cs[g]

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	20.786	175.599	175.599	76.500	0.000	24.145	76.500	49.532	–8.678
	300.00	20.786	175.728	175.599	76.538	0.038	23.820	76.479	49.364	–8.595
	400.00	20.786	181.707	176.415	78.617	2.117	5.934	73.281	41.178	–5.377
	500.00	20.786	186.346	177.954	80.696	4.196	–12.477	72.229	33.274	–3.476
	600.00	20.786	190.135	179.678	82.774	6.274	–31.307	71.201	25.580	–2.227
	700.00	20.786	193.340	181.407	84.853	8.353	–50.485	70.183	18.057	–1.347
	800.00	20.786	196.115	183.076	86.932	10.432	–69.961	69.168	10.680	–0.697
	900.00	20.786	198.563	184.663	89.010	12.510	–89.697	68.152	3.430	–0.199
	1000.00	20.786	200.753	186.165	91.089	14.589	–109.665	0.000	0.000	0.000
	1100.00	20.786	202.735	187.582	93.167	16.667	–129.841	0.000	0.000	0.000
	1200.00	20.800	204.544	188.922	95.247	18.747	–150.206	0.000	0.000	0.000
	1300.00	20.805	206.209	190.188	97.327	20.827	–170.745	0.000	0.000	0.000
	1400.00	20.816	207.751	191.388	99.408	22.908	–191.444	0.000	0.000	0.000
	1500.00	20.842	209.188	192.528	101.491	24.991	–212.291	0.000	0.000	0.000
	1600.00	20.888	210.535	193.611	103.577	27.077	–233.278	0.000	0.000	0.000
	1700.00	20.959	211.803	194.645	105.669	29.169	–254.396	0.000	0.000	0.000
	1800.00	21.058	213.004	195.631	107.770	31.270	–275.637	0.000	0.000	0.000
	1900.00	21.187	214.145	196.576	109.882	33.382	–296.995	0.000	0.000	0.000
	2000.00	21.347	215.236	197.482	112.008	35.508	–318.464	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Ja2	Ja1

Cs2[g] CESIUM (GAS) 265.811

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	38.129	284.077	284.077	106.274	0.000	21.576	106.274	72.349	−12.675
	300.00	38.132	284.313	284.078	106.345	0.071	21.051	106.225	72.139	−12.561
	400.00	38.377	295.314	285.576	110.169	3.895	−7.957	99.497	62.530	−8.166
	500.00	38.652	303.908	288.414	114.021	7.747	−37.933	97.086	53.570	−5.596
	600.00	38.912	310.978	291.603	117.899	11.625	−68.688	94.752	45.087	−3.925
	700.00	39.160	316.995	294.811	121.803	15.529	−100.094	92.464	36.991	−2.760
	800.00	39.401	322.240	297.919	125.731	19.457	−132.061	90.203	29.220	−1.908
	900.00	39.643	326.895	300.885	129.683	23.409	−164.522	87.966	21.732	−1.261
	1000.00	39.888	331.084	303.699	133.659	27.385	−197.425	−48.518	21.905	−1.144
	1100.00	40.141	334.898	306.364	137.661	31.387	−230.726	−48.674	28.955	−1.375
	1200.00	40.403	338.401	308.890	141.688	35.414	−264.394	−48.806	36.018	−1.568
	1300.00	40.677	341.646	311.286	145.742	39.468	−298.398	−48.912	43.091	−1.731
	1400.00	40.964	344.671	313.564	149.824	43.550	−332.716	−48.992	50.172	−1.872
	1500.00	41.266	347.508	315.733	153.935	47.661	−367.326	−49.046	57.257	−1.994
	1600.00	41.585	350.181	317.804	158.078	51.804	−402.212	−49.077	64.345	−2.101
	1700.00	41.923	352.712	319.783	162.253	55.979	−437.357	−49.086	71.434	−2.195
	1800.00	42.279	355.118	321.680	166.463	60.189	−472.750	−49.077	78.523	−2.279
	1900.00	42.656	357.414	323.501	170.709	64.435	−508.377	−49.054	85.612	−2.354
	2000.00	43.055	359.612	325.252	174.995	68.721	−544.230	−49.022	92.699	−2.421

References

Phase	H / S	C_p
GAS	Ja1	Ja1

Cs3AsO4 CESIUM ARSENATE 537.635

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	176.221	283.592	283.592	−1668.496	0.000	−1753.049	−1668.496	−1543.914	270.487
	300.00	176.414	284.682	283.595	−1668.170	0.326	−1753.574	−1668.503	−1543.141	268.685
	400.00	185.749	336.754	290.632	−1650.047	18.449	−1784.749	−1674.659	−1499.298	195.788
	500.00	193.991	379.099	304.217	−1631.055	37.441	−1820.605	−1673.744	−1455.550	152.060
	600.00	201.804	415.163	319.774	−1611.263	57.233	−1860.361	−1672.212	−1412.046	122.929

References

Phase	H / S	C_p
SOL	G1	G1

212.809

CESIUM BROMIDE

CsBr

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	52.183	112.968	112.968	−405.430	0.000	−439.111	−405.430	−391.034	68.508
	300.00	52.173	113.291	112.969	−405.333	0.097	−439.321	−405.463	−390.945	68.070
	400.00	53.024	128.364	115.019	−400.092	5.338	−451.437	−422.739	−382.286	49.921
	500.00	55.246	140.420	118.930	−394.685	10.745	−464.895	−422.309	−372.217	38.885
	600.00	58.007	150.731	123.390	−389.025	16.405	−479.464	−421.615	−362.259	31.537
	700.00	61.023	159.897	127.962	−383.075	22.355	−495.003	−420.629	−352.440	26.299
	800.00	64.175	168.250	132.483	−376.816	28.614	−511.416	−419.338	−342.783	22.381
	900.00	67.406	175.995	136.892	−370.238	35.192	−528.633	−417.732	−333.307	19.345
	909.00	67.700	176.667	137.283	−369.630	35.800	−530.220	−417.572	−332.464	19.105
			25.960		23.598					
LIQ	909.00	77.822	202.628	137.283	−346.032	59.398	−530.220	−393.974	−332.464	19.105
	1000.00	77.822	210.053	143.572	−338.950	66.480	−549.002	−458.558	−322.723	16.857
	1100.00	77.822	217.470	149.958	−331.167	74.263	−570.384	−454.741	−309.324	14.689
	1200.00	77.822	224.241	155.871	−323.385	82.045	−592.475	−450.928	−296.273	12.896
	1300.00	77.822	230.470	161.373	−315.603	89.827	−615.215	−447.118	−283.540	11.393
	1400.00	77.822	236.238	166.517	−307.821	97.609	−638.554	−443.313	−271.100	10.115

References

Phase	H / S	C_p
SOL	Nb1	Pa2
LIQ	Pa2	Pa2

CsBr[g] CESIUM BROMIDE (GAS) 212.809

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	37.070	267.429	267.429	−209.200	0.000	−288.934	−209.200	−240.857	42.197
	300.00	37.080	267.659	267.430	−209.131	0.069	−289.429	−209.261	−241.053	41.971
	400.00	37.462	278.384	268.890	−205.402	3.798	−316.756	−228.049	−247.604	32.334
	500.00	37.686	286.770	271.658	−201.644	7.556	−345.029	−229.268	−252.351	26.363
	600.00	37.846	293.655	274.767	−197.867	11.333	−374.060	−230.457	−256.855	22.361
	700.00	37.977	299.499	277.893	−194.076	15.124	−403.725	−231.629	−261.162	19.488
	800.00	38.092	304.578	280.918	−190.272	18.928	−433.935	−232.794	−265.302	17.322
	900.00	38.198	309.071	283.802	−186.458	22.742	−464.622	−233.953	−269.296	15.630
	1000.00	38.298	313.101	286.534	−182.633	26.567	−495.734	−302.241	−269.454	14.075
	1100.00	38.394	316.755	289.117	−178.798	30.402	−527.229	−302.371	−266.169	12.639
	1200.00	38.488	320.100	291.562	−174.954	34.246	−559.074	−302.496	−262.873	11.443
	1300.00	38.580	323.185	293.877	−171.101	38.099	−591.241	−302.616	−259.566	10.429
	1400.00	38.671	326.047	296.074	−167.238	41.962	−623.704	−302.730	−256.250	9.561
	1500.00	38.761	328.718	298.162	−163.367	45.833	−656.444	−302.840	−252.926	8.808
	1600.00	38.850	331.222	300.151	−159.486	49.714	−689.442	−302.947	−249.595	8.148
	1700.00	38.938	333.580	302.049	−155.597	53.603	−722.683	−303.054	−246.257	7.567
	1800.00	39.026	335.808	303.863	−151.698	57.502	−756.154	−303.162	−242.913	7.049
	1900.00	39.114	337.921	305.601	−147.791	61.409	−789.841	−303.276	−239.563	6.586
	2000.00	39.201	339.929	307.267	−143.876	65.324	−823.734	−303.399	−236.206	6.169

References

Phase	H / S	C_p
GAS	Nb1	Nb1,e

Cs2CO3 CESIUM CARBONATE 325.820

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	123.830	204.472	204.472	−1147.253	0.000	−1208.216	−1147.253	−1063.985	186.406
	300.00	124.110	205.239	204.474	−1147.024	0.229	−1208.595	−1147.240	−1063.468	185.166
	400.00	136.371	242.732	209.504	−1133.962	13.291	−1231.054	−1150.225	−1034.334	135.070
	500.00	145.771	274.203	219.378	−1119.841	27.412	−1256.942	−1148.286	−1005.574	105.052
	600.00	154.043	301.522	230.841	−1104.844	42.409	−1285.757	−1145.821	−977.255	85.078
	700.00	161.784	325.854	242.706	−1089.050	58.203	−1317.148	−1142.879	−949.386	70.844
	800.00	169.241	347.947	254.501	−1072.497	74.756	−1350.854	−1139.444	−921.973	60.199
	900.00	176.534	368.303	266.029	−1055.207	92.046	−1386.679	−1135.484	−895.021	51.946
	1000.00	183.724	387.275	277.215	−1037.193	110.060	−1424.468	−1265.243	−861.126	44.981
	1065.00	188.360	398.990	284.292	−1025.100	122.153	−1450.024	−1260.683	−835.003	40.954

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	Tk1,e	St1	MPT= 1065.

168.358 CESIUM CHLORIDE **CsCl**

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[——— J / (K mol) ———]			[——— kJ / mol ———]					[–]
SOL–A	298.15	52.444	101.182	101.182	–442.835	0.000	–473.002	–442.835	–414.355	72.593
	300.00	52.485	101.506	101.183	–442.738	0.097	–473.190	–442.829	–414.178	72.115
	400.00	54.695	116.908	103.268	–437.379	5.456	–484.142	–444.480	–404.005	52.758
	500.00	56.904	129.350	107.278	–431.799	11.036	–496.474	–443.817	–393.959	41.157
	600.00	59.114	139.920	111.859	–425.998	16.837	–509.950	–442.939	–384.066	33.436
	700.00	61.324	149.199	116.543	–419.976	22.859	–524.415	–441.852	–374.337	27.933
	743.00	62.274	152.883	118.541	–417.319	25.516	–530.911	–441.320	–370.205	26.026
			5.069		3.766					
SOL–B	743.00	63.399	157.951	118.541	–413.553	29.282	–530.911	–437.554	–370.205	26.026
	800.00	63.680	162.648	121.518	–409.931	32.904	–540.049	–436.754	–365.068	23.837
	900.00	64.174	170.177	126.514	–403.538	39.297	–556.697	–435.319	–356.194	20.673
	918.00	64.263	171.448	127.382	–402.382	40.453	–559.772	–435.056	–354.614	20.178
			17.319		15.899					
LIQ	918.00	77.404	188.768	127.382	–386.483	56.352	–559.772	–419.157	–354.614	20.178
	1000.00	77.404	195.390	132.691	–380.136	62.699	–575.526	–484.017	–345.240	18.034
	1100.00	77.404	202.768	138.732	–372.396	70.439	–595.440	–480.233	–331.546	15.744
	1200.00	77.404	209.503	144.353	–364.655	78.180	–616.058	–476.454	–318.196	13.851
	1300.00	77.404	215.698	149.606	–356.915	85.920	–637.323	–472.680	–305.161	12.262
	1400.00	77.404	221.434	154.534	–349.175	93.660	–659.183	–468.911	–292.416	10.910
	1500.00	77.404	226.775	159.174	–341.434	101.401	–681.596	–465.148	–279.941	9.748
	1597.45	77.404	231.647	163.448	–333.891	108.944	–703.935	–461.487	–268.025	8.764

References

Phase	H / S	C_p	Remarks
SOL–A	Ja1	Ja1	
SOL–B	Ja1	Ja1	
LIQ	Ja1	Ku1,Ja1	Ja1 NBPT= 1597.3 GAS (CsCl + Cs2Cl2)

CsCl[g] CESIUM CHLORIDE (GAS) 168.358

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[	J / (K mol)	]	[		kJ / mol		]	
GAS	298.15	37.250	256.066	256.066	−240.162	0.000	−316.508	−240.162	−257.860	45.176
	300.00	37.252	256.296	256.066	−240.093	0.069	−316.982	−240.184	−257.970	44.917
	400.00	37.359	267.027	257.529	−236.363	3.799	−343.174	−243.464	−263.037	34.349
	500.00	37.466	275.375	260.294	−232.621	7.541	−370.309	−244.639	−267.794	27.976
	600.00	37.572	282.216	263.395	−228.869	11.293	−398.199	−245.811	−272.315	23.707
	700.00	37.679	288.015	266.508	−225.107	15.055	−426.718	−246.983	−276.639	20.643
	800.00	37.786	293.054	269.518	−221.334	18.828	−455.777	−248.157	−280.796	18.334
	900.00	37.892	297.510	272.386	−217.550	22.612	−485.309	−249.330	−284.805	16.530
	1000.00	37.999	301.508	275.101	−213.755	26.407	−515.263	−317.636	−284.977	14.886
	1100.00	38.106	305.135	277.669	−209.950	30.212	−545.598	−317.787	−281.704	13.377
	1200.00	38.212	308.455	280.098	−206.134	34.028	−576.280	−317.932	−278.417	12.119
	1300.00	38.319	311.518	282.399	−202.307	37.855	−607.281	−318.072	−275.119	11.054
	1400.00	38.426	314.362	284.582	−198.470	41.692	−638.576	−318.207	−271.810	10.141
	1500.00	38.533	317.016	286.657	−194.622	45.540	−670.147	−318.336	−268.491	9.350
	1600.00	38.639	319.507	288.633	−190.764	49.398	−701.974	−318.461	−265.164	8.657
	1700.00	38.746	321.852	290.518	−186.894	53.268	−734.043	−318.586	−261.829	8.045
	1800.00	38.853	324.070	292.321	−183.014	57.148	−766.340	−318.712	−258.487	7.501
	1900.00	38.959	326.173	294.048	−179.124	61.038	−798.853	−318.842	−255.138	7.014
	2000.00	39.066	328.175	295.705	−175.223	64.939	−831.572	−318.979	−251.781	6.576
	2100.00	39.173	330.083	297.297	−171.311	68.851	−864.485	−319.128	−248.418	6.179
	2200.00	39.279	331.908	298.829	−167.388	72.774	−897.586	−319.291	−245.047	5.818

References

Phase	H / S	C_p
GAS	Ja1	Ja1

336.716

DICESIUM DICHLORIDE (GAS) **Cs2Cl2**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	81.613	383.364	383.364	−659.817	0.000	−774.117	−659.817	−656.822	115.072
	300.00	81.632	383.869	383.365	−659.666	0.151	−774.827	−659.848	−656.803	114.360
	400.00	82.287	407.456	386.577	−651.465	8.352	−814.448	−665.668	−654.174	85.426
	500.00	82.590	425.854	392.660	−643.220	16.597	−856.147	−667.255	−651.116	68.022
	600.00	82.756	440.928	399.486	−634.952	24.865	−899.509	−668.835	−647.740	56.391
	700.00	82.857	453.693	406.341	−626.671	33.146	−944.256	−670.422	−644.099	48.063
	800.00	82.923	464.762	412.967	−618.382	41.435	−990.191	−672.027	−640.229	41.803
	900.00	82.969	474.531	419.276	−610.087	49.730	−1037.165	−673.647	−636.157	36.922
	1000.00	83.002	483.275	425.246	−601.788	58.029	−1085.063	−809.551	−624.491	32.620
	1100.00	83.027	491.187	430.887	−593.487	66.330	−1133.792	−809.160	−606.004	28.777
	1200.00	83.046	498.412	436.217	−585.183	74.634	−1183.278	−808.779	−587.552	25.575
	1300.00	83.062	505.060	441.260	−576.878	82.939	−1233.456	−808.407	−569.132	22.868
	1400.00	83.074	511.216	446.040	−568.571	91.246	−1284.273	−808.044	−550.740	20.548
	1500.00	83.085	516.948	450.578	−560.263	99.554	−1335.685	−807.690	−532.373	18.539
	1600.00	83.094	522.310	454.896	−551.954	107.863	−1387.651	−807.350	−514.030	16.781
	1700.00	83.101	527.348	459.011	−543.644	116.173	−1440.136	−807.027	−495.708	15.231
	1800.00	83.108	532.098	462.941	−535.334	124.483	−1493.111	−806.728	−477.404	13.854
	1900.00	83.114	536.592	466.700	−527.023	132.794	−1546.547	−806.459	−459.115	12.622
	2000.00	83.119	540.855	470.302	−518.711	141.106	−1600.421	−806.225	−440.840	11.514

References

Phase	H / S	C_p
GAS	Ja1	Ja1

CsF CESIUM FLUORIDE 151.904

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	51.976	88.282	88.282	–554.673	0.000	–580.994	–554.673	–525.376	92.044
	300.00	52.008	88.604	88.283	–554.577	0.096	–581.158	–554.665	–525.194	91.444
	400.00	53.783	103.809	90.345	–549.287	5.386	–590.811	–556.259	–514.759	67.221
	500.00	55.557	116.001	94.295	–543.820	10.853	–601.821	–555.605	–504.456	52.700
	600.00	57.332	126.287	98.792	–538.176	16.497	–613.948	–554.803	–494.299	43.033
	700.00	59.106	135.258	103.374	–532.354	22.319	–627.034	–553.852	–484.288	36.138
	800.00	60.881	143.266	107.868	–526.355	28.318	–640.968	–552.750	–474.424	30.977
	900.00	62.655	150.539	112.211	–520.178	34.495	–655.663	–551.492	–464.707	26.971
	976.00	64.004	155.673	115.398	–515.365	39.308	–667.301	–617.808	–455.418	24.374
			22.249		21.715					
LIQ	976.00	74.057	177.922	115.398	–493.650	61.023	–667.301	–596.093	–455.418	24.374
	1000.00	74.057	179.721	116.920	–491.872	62.801	–671.593	–595.257	–451.969	23.608
	1100.00	74.057	186.779	122.955	–484.467	70.206	–689.924	–591.783	–437.809	20.790
	1200.00	74.057	193.223	128.546	–477.061	77.612	–708.928	–588.321	–423.964	18.455
	1300.00	74.057	199.151	133.752	–469.655	85.018	–728.551	–584.869	–410.407	16.490
	1400.00	74.057	204.639	138.622	–462.250	92.423	–748.744	–581.426	–397.117	14.817
	1500.00	74.057	209.748	143.195	–454.844	99.829	–769.466	–577.991	–384.071	13.375
	1504.00	74.057	209.945	143.373	–454.548	100.125	–770.306	–577.854	–383.555	13.321

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja1	NBPT= 1504., GAS (CsF + Cs2F2)

151.904 CESIUM FLUORIDE (GAS) **CsF**[g]

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	35.824	243.200	243.200	–356.477	0.000	–428.987	–356.477	–373.369	65.413
	300.00	35.846	243.421	243.200	–356.411	0.066	–429.437	–356.499	–373.474	65.028
	400.00	36.639	253.858	244.618	–352.781	3.696	–454.324	–359.753	–378.272	49.397
	500.00	37.039	262.080	247.317	–349.095	7.382	–480.136	–360.880	–382.771	39.988
	600.00	37.284	268.857	250.359	–345.378	11.099	–506.692	–362.006	–387.044	33.695
	700.00	37.455	274.617	253.423	–341.641	14.836	–533.873	–363.139	–391.127	29.186
	800.00	37.588	279.628	256.392	–337.889	18.588	–561.591	–364.285	–395.047	25.794
	900.00	37.698	284.062	259.225	–334.124	22.353	–589.780	–365.438	–398.824	23.147
	1000.00	37.794	288.039	261.911	–330.350	26.127	–618.388	–433.734	–398.764	20.829
	1100.00	37.881	291.645	264.453	–326.566	29.911	–647.375	–433.882	–395.260	18.769
	1200.00	37.961	294.944	266.858	–322.774	33.703	–676.707	–434.034	–391.742	17.052
	1300.00	38.038	297.986	269.137	–318.974	37.503	–706.355	–434.187	–388.212	15.599
	1400.00	38.111	300.808	271.300	–315.166	41.311	–736.297	–434.342	–384.669	14.352
	1500.00	38.181	303.439	273.356	–311.352	45.125	–766.511	–434.499	–381.116	13.272
	1600.00	38.250	305.906	275.314	–307.530	48.947	–796.979	–434.658	–377.552	12.326
	1700.00	38.317	308.227	277.182	–303.702	52.775	–827.687	–434.823	–373.978	11.491
	1800.00	38.384	310.419	278.968	–299.867	56.610	–858.620	–434.995	–370.394	10.749
	1900.00	38.449	312.496	280.679	–296.025	60.452	–889.767	–435.177	–366.800	10.084
	2000.00	38.514	314.470	282.319	–292.177	64.300	–921.116	–435.371	–363.196	9.486

References

Phase	H / S	C_p
GAS	Ja1	Ja1

Cs2F2[g] DICESIUM DIFLUORIDE (GAS) 303.808

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	79.885	351.565	351.565	−890.104	0.000	−994.923	−890.104	−883.687	154.818
	300.00	79.924	352.060	351.567	−889.956	0.148	−995.574	−890.134	−883.647	153.857
	400.00	81.313	375.271	354.722	−881.884	8.220	−1031.993	−895.828	−879.888	114.902
	500.00	81.959	393.493	360.720	−873.717	16.387	−1070.464	−897.286	−875.735	91.487
	600.00	82.311	408.470	367.467	−865.502	24.602	−1110.584	−898.757	−871.287	75.852
	700.00	82.525	421.176	374.255	−857.260	32.844	−1152.082	−900.256	−866.590	64.666
	800.00	82.666	432.205	380.824	−849.000	41.104	−1194.764	−901.791	−861.676	56.262
	900.00	82.763	441.948	387.085	−840.728	49.376	−1238.481	−903.356	−856.568	49.714
	1000.00	82.834	450.672	393.015	−832.448	57.656	−1283.119	−1039.217	−843.871	44.079
	1100.00	82.888	458.569	398.621	−824.161	65.943	−1328.588	−1038.795	−824.357	39.145
	1200.00	82.930	465.783	403.922	−815.871	74.233	−1374.810	−1038.391	−804.881	35.036
	1300.00	82.963	472.422	408.939	−807.576	82.528	−1421.725	−1038.003	−785.438	31.559
	1400.00	82.991	478.572	413.696	−799.278	90.826	−1469.279	−1037.630	−766.024	28.581
	1500.00	83.014	484.298	418.214	−790.978	99.126	−1517.425	−1037.272	−746.636	26.000
	1600.00	83.033	489.657	422.514	−782.675	107.429	−1566.126	−1036.932	−727.271	23.743
	1700.00	83.050	494.691	426.613	−774.371	115.733	−1615.346	−1036.614	−707.927	21.752
	1800.00	83.065	499.438	430.528	−766.065	124.039	−1665.055	−1036.322	−688.601	19.983
	1900.00	83.078	503.930	434.274	−757.758	132.346	−1715.225	−1036.062	−669.291	18.400
	2000.00	83.090	508.191	437.864	−749.450	140.654	−1765.833	−1035.839	−649.993	16.976

References

Phase	H / S	C_p
GAS	Ja1	Ja1

259.810

CESIUM IODIDE

CsI

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	52.593	123.051	123.051	−346.603	0.000	−383.291	−346.603	−340.590	59.670
	300.00	52.580	123.377	123.052	−346.506	0.097	−383.519	−346.616	−340.553	59.296
	400.00	53.184	138.535	125.115	−341.235	5.368	−396.649	−357.441	−337.463	44.068
	500.00	55.125	150.596	129.043	−335.826	10.777	−411.124	−379.260	−330.361	34.513
	600.00	57.592	160.860	133.510	−330.193	16.410	−426.709	−378.609	−320.638	27.914
	700.00	60.306	169.939	138.077	−324.300	22.303	−443.257	−377.693	−311.045	23.210
	800.00	63.154	178.177	142.582	−318.128	28.475	−460.669	−376.501	−301.602	19.693
	900.00	66.078	185.783	146.965	−311.666	34.937	−478.872	−375.025	−292.325	16.966
			28.451		25.606					
LIQ	900.00	70.082	214.235	146.965	−286.060	60.543	−478.872	−349.419	−292.325	16.966
	1000.00	70.082	221.618	154.068	−279.052	67.551	−500.671	−414.535	−282.383	14.750
	1100.00	70.082	228.298	160.517	−272.044	74.559	−523.172	−411.502	−269.315	12.789
	1200.00	70.082	234.396	166.423	−265.036	81.567	−546.311	−408.474	−256.522	11.166
	1300.00	70.082	240.005	171.871	−258.028	88.575	−570.035	−405.450	−243.982	9.803
	1400.00	70.082	245.199	176.925	−251.019	95.584	−594.298	−402.430	−231.675	8.644

References

Phase	H / S	C_p
SOL	Nb1	Pa2
LIQ	Pa2	Pa2

CsI[g] CESIUM IODIDE (GAS) 259.810

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	37.451	275.291	275.291	−151.900	0.000	−233.978	−151.900	−191.278	33.511
	300.00	37.458	275.523	275.292	−151.831	0.069	−234.488	−151.941	−191.522	33.347
	400.00	37.747	286.343	276.765	−148.069	3.831	−262.606	−164.275	−203.420	26.564
	500.00	37.928	294.786	279.556	−144.285	7.615	−291.678	−187.719	−210.914	22.034
	600.00	38.066	301.714	282.689	−140.485	11.415	−321.513	−188.900	−215.442	18.756
	700.00	38.184	307.591	285.837	−136.672	15.228	−351.986	−190.065	−219.773	16.400
	800.00	38.291	312.696	288.882	−132.849	19.051	−383.006	−191.222	−223.938	14.622
	900.00	38.392	317.212	291.784	−129.014	22.886	−414.505	−192.372	−227.959	13.230
	1000.00	38.489	321.262	294.533	−125.170	26.730	−446.433	−260.653	−228.145	11.917
	1100.00	38.584	324.935	297.132	−121.317	30.583	−478.745	−260.775	−224.888	10.679
	1200.00	38.677	328.296	299.591	−117.454	34.446	−511.409	−260.892	−221.621	9.647
	1300.00	38.768	331.396	301.920	−113.581	38.319	−544.396	−261.004	−218.343	8.773
	1400.00	38.859	334.272	304.129	−109.700	42.200	−577.681	−261.110	−215.058	8.024
	1500.00	38.949	336.956	306.229	−105.810	46.090	−611.244	−261.213	−211.765	7.374
	1600.00	39.039	339.473	308.229	−101.910	49.990	−645.067	−261.313	−208.465	6.806
	1700.00	39.128	341.842	310.137	−98.002	53.898	−679.134	−261.412	−205.159	6.304
	1800.00	39.217	344.081	311.962	−94.085	57.815	−713.431	−261.515	−201.847	5.857
	1900.00	39.306	346.204	313.708	−90.158	61.742	−747.946	−261.622	−198.529	5.458
	2000.00	39.395	348.222	315.384	−86.223	65.677	−782.668	−261.739	−195.205	5.098

References

Phase	H / S	C_p
GAS	Nb1	Nb1,e

148.905

CESIUM MONOXIDE (GAS) **CsO**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	36.475	255.539	255.539	62.760	0.000	−13.429	62.760	42.540	−7.453
	300.00	36.490	255.764	255.539	62.827	0.067	−13.902	62.741	42.415	−7.385
	400.00	37.057	266.349	256.979	66.508	3.748	−40.031	59.659	36.474	−4.763
	500.00	37.360	274.654	259.713	70.230	7.470	−67.096	58.721	30.786	−3.216
	600.00	37.559	281.484	262.789	73.977	11.217	−94.913	57.782	25.287	−2.201
	700.00	37.709	287.285	265.884	77.741	14.981	−123.359	56.822	19.947	−1.488
	800.00	37.833	292.329	268.882	81.518	18.758	−152.345	55.836	14.746	−0.963
	900.00	37.942	296.791	271.740	85.307	22.547	−181.806	54.828	9.670	−0.561
	1000.00	38.041	300.794	274.448	89.106	26.346	−211.688	−13.334	8.414	−0.440
	1100.00	38.135	304.424	277.011	92.915	30.155	−241.952	−13.359	10.590	−0.503
	1200.00	38.224	307.746	279.436	96.733	33.973	−272.563	−13.395	12.769	−0.556
	1300.00	38.310	310.809	281.733	100.559	37.799	−303.493	−13.440	14.951	−0.601
	1400.00	38.394	313.651	283.912	104.395	41.635	−334.717	−13.492	17.136	−0.639
	1500.00	38.477	316.303	285.984	108.238	45.478	−366.217	−13.552	19.326	−0.673
	1600.00	38.558	318.789	287.958	112.090	49.330	−397.973	−13.620	21.520	−0.703
	1700.00	38.638	321.129	289.841	115.950	53.190	−429.970	−13.698	23.719	−0.729
	1800.00	38.718	323.340	291.641	119.818	57.058	−462.194	−13.789	25.922	−0.752
	1900.00	38.797	325.435	293.365	123.693	60.933	−494.634	−13.895	28.131	−0.773
	2000.00	38.875	327.427	295.019	127.577	64.817	−527.278	−14.019	30.346	−0.793

References

Phase	H / S	C_p
GAS	Ja1	Ja1

164.904

CESIUM DIOXIDE **CsO2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	79.079	142.256	142.256	−286.186	0.000	−328.600	−286.186	−242.048	42.406
	300.00	79.136	142.745	142.258	−286.040	0.146	−328.863	−286.154	−241.775	42.097
	400.00	82.232	165.935	145.398	−277.971	8.215	−344.345	−286.333	−226.579	29.588
	500.00	85.328	184.618	151.432	−269.593	16.593	−361.902	−284.145	−211.889	22.136
	600.00	88.425	200.449	158.314	−260.906	25.280	−381.175	−281.723	−197.661	17.208
	700.00	91.521	214.312	165.344	−251.908	34.278	−401.927	−279.076	−183.857	13.720
	800.00	94.617	226.735	172.254	−242.601	43.585	−423.989	−276.201	−170.447	11.129
	830.00	95.546	230.235	174.287	−239.749	46.437	−430.844	−275.292	−166.498	10.478

References

Phase	H / S	C_p	Remarks	
SOL	Tk1	Tk1,e	Tk1	MPT= 830., L= 21. kJ.

Cs2O CESIUM OXIDE 281.810

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	75.985	146.858	146.858	−345.975	0.000	−389.761	−345.975	−308.405	54.031
	300.00	76.048	147.329	146.860	−345.834	0.141	−390.033	−345.981	−308.172	53.658
	400.00	79.430	169.671	149.883	−338.060	7.915	−405.928	−350.245	−294.180	38.416
	500.00	82.768	187.754	155.704	−329.950	16.025	−423.827	−349.926	−280.193	29.272
	600.00	86.089	203.139	162.358	−321.507	24.468	−443.390	−349.276	−266.302	23.184
	700.00	89.401	216.658	169.168	−312.732	33.243	−464.393	−348.320	−252.545	18.845
	763.00	91.486	224.451	173.415	−307.034	38.941	−478.290	−347.568	−243.957	16.701

References

Phase	H / S	C_p	Remarks
SOL	Nb1,Tk1	Pa1	Pa1 MPT= 763.

Cs2O[g] CESIUM OXIDE (GAS) 281.810

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	59.414	326.880	326.880	−144.285	0.000	−241.744	−144.285	−160.389	28.099
	300.00	59.447	327.247	326.881	−144.175	0.110	−242.349	−144.322	−160.489	27.944
	400.00	60.623	344.534	329.230	−138.163	6.122	−275.977	−150.348	−164.228	21.446
	500.00	61.172	358.128	333.699	−132.070	12.215	−311.134	−152.047	−167.500	17.499
	600.00	61.474	369.310	338.730	−125.937	18.348	−347.523	−153.706	−170.435	14.838
	700.00	61.659	378.801	343.793	−119.780	24.505	−384.940	−155.368	−173.092	12.916
	800.00	61.782	387.043	348.696	−113.607	30.678	−423.241	−157.053	−175.509	11.460
	900.00	61.869	394.325	353.369	−107.424	36.861	−462.317	−158.762	−177.714	10.314
	1000.00	61.934	400.847	357.796	−101.234	43.051	−502.081	−294.763	−172.314	9.001
	1100.00	61.984	406.753	361.983	−95.038	49.247	−542.466	−294.479	−160.083	7.602
	1200.00	62.024	412.148	365.941	−88.837	55.448	−583.415	−294.212	−147.877	6.437
	1300.00	62.057	417.114	369.689	−82.633	61.652	−624.881	−293.959	−135.693	5.452
	1400.00	62.085	421.714	373.243	−76.426	67.859	−666.825	−293.721	−123.528	4.609
	1500.00	62.109	425.998	376.619	−70.216	74.069	−709.213	−293.497	−111.379	3.879
	1600.00	62.131	430.007	379.832	−64.004	80.281	−752.016	−293.291	−99.245	3.240
	1700.00	62.150	433.774	382.895	−57.790	86.495	−795.207	−293.108	−87.122	2.677
	1800.00	62.167	437.327	385.821	−51.575	92.710	−838.763	−292.951	−75.010	2.177
	1900.00	62.183	440.689	388.621	−45.357	98.928	−882.666	−292.827	−62.906	1.729
	2000.00	62.198	443.879	391.305	−39.138	105.147	−926.895	−292.742	−50.807	1.327

References

Phase	H / S	C_p
GAS	Tk1	Pa1,e

313.809

DICESIUM TRIOXIDE **Cs2O3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	125.515	230.120	230.120	−520.071	0.000	−588.681	−520.071	−446.161	78.166
	300.00	125.604	230.897	230.122	−519.839	0.232	−589.108	−520.040	−445.703	77.604
	400.00	130.415	267.690	235.106	−507.038	13.033	−614.114	−522.248	−419.842	54.826
	500.00	135.227	297.308	244.677	−493.756	26.315	−642.410	−519.817	−394.514	41.215
	600.00	140.038	322.388	255.590	−479.992	40.079	−673.425	−517.005	−369.711	32.186
	700.00	144.850	344.336	266.732	−465.748	54.323	−706.783	−513.835	−345.408	25.775

References

Phase	H / S	C_p
SOL	Tk1	e

149.913

CESIUM HYDROXIDE **CsOH**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	67.875	98.742	98.742	−416.726	0.000	−446.166	−416.726	−370.716	64.948
	300.00	67.979	99.163	98.744	−416.600	0.126	−446.349	−416.714	−370.431	64.498
	400.00	74.392	119.558	101.482	−409.495	7.231	−457.319	−417.824	−354.450	46.286
	410.00	75.122	121.404	101.945	−408.748	7.978	−458.524	−417.688	−352.867	44.956
			3.163		1.297					
SOL−B	410.00	75.122	124.568	101.945	−407.451	9.275	−458.524	−416.391	−352.867	44.956
	493.00	81.810	138.997	106.988	−400.946	15.780	−469.471	−414.967	−340.134	36.038
			12.306		6.067					
SOL−C	493.00	81.810	151.303	106.988	−394.879	21.847	−469.471	−408.900	−340.134	36.038
	500.00	82.425	152.461	107.617	−394.304	22.422	−470.535	−408.754	−339.159	35.432
			9.122		4.561					
LIQ	500.00	81.588	161.583	107.617	−389.743	26.983	−470.535	−404.193	−339.159	35.432
	600.00	81.588	176.458	117.889	−381.584	35.142	−487.459	−402.185	−326.341	28.411
	700.00	81.588	189.035	127.177	−373.425	43.301	−505.750	−400.218	−313.856	23.420
	800.00	81.588	199.930	135.605	−365.267	51.459	−525.210	−398.299	−301.650	19.696
	900.00	81.588	209.539	143.297	−357.108	59.618	−545.693	−396.425	−289.682	16.813
	1000.00	81.588	218.136	150.359	−348.949	67.777	−567.085	−461.729	−274.214	14.323
	1100.00	81.588	225.912	156.879	−340.790	75.936	−589.293	−458.923	−255.599	12.137
	1200.00	81.588	233.011	162.932	−332.631	84.095	−612.244	−456.157	−237.237	10.327
	1263.00	81.588	237.186	166.533	−327.491	89.235	−627.057	−454.435	−225.788	9.338

References

Phase	H / S	C_p	Remarks	
SOL−A	Ja1	Ja1		
SOL−B	Ja1	Ja1		
SOL−C	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja1	NBPT= 1263.0, GAS (CsOH)

CsOH[g] CESIUM HYDROXIDE (GAS) 149.913

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[	J / (K mol)		] [		kJ / mol		]	[−]
GAS	298.15	49.716	254.790	254.790	−259.408	0.000	−335.373	−259.408	−259.924	45.538
	300.00	49.771	255.097	254.790	−259.316	0.092	−335.845	−259.430	−259.927	45.257
	400.00	51.558	269.702	256.770	−254.235	5.173	−362.116	−262.564	−259.247	33.854
	500.00	52.388	281.304	260.556	−249.034	10.374	−389.686	−263.484	−258.310	26.985
	600.00	52.963	290.908	264.838	−243.765	15.643	−418.311	−264.366	−257.192	22.391
	700.00	53.463	299.111	269.162	−238.444	20.964	−447.821	−265.237	−255.928	19.098
	800.00	53.941	306.281	273.363	−233.074	26.334	−478.098	−266.106	−254.539	16.620
	900.00	54.417	312.662	277.382	−227.656	31.752	−509.051	−266.973	−253.041	14.686
	1000.00	54.892	318.420	281.202	−222.190	37.218	−540.610	−334.970	−247.740	12.941
	1100.00	55.368	323.674	284.828	−216.677	42.731	−572.719	−334.810	−239.024	11.350
	1200.00	55.839	328.512	288.269	−211.117	48.291	−605.331	−334.643	−230.324	10.026
	1300.00	56.300	333.000	291.539	−205.510	53.898	−638.409	−334.468	−221.638	8.906
	1400.00	56.747	337.188	294.652	−199.857	59.551	−671.921	−334.285	−212.965	7.946
	1500.00	57.174	341.118	297.620	−194.161	65.247	−705.838	−334.096	−204.306	7.115
	1600.00	57.574	344.821	300.456	−188.423	70.985	−740.137	−333.904	−195.660	6.388
	1700.00	57.942	348.323	303.169	−182.647	76.761	−774.796	−333.713	−187.025	5.747
	1800.00	58.271	351.644	305.771	−176.836	82.572	−809.796	−333.527	−178.402	5.177
	1900.00	58.555	354.802	308.269	−170.995	88.413	−845.119	−333.353	−169.789	4.668
	2000.00	58.788	357.812	310.672	−165.127	94.281	−880.751	−333.199	−161.184	4.210

References

Phase	H / S	C_p
GAS	Ja1	Ja1

299.826 DICESIUM DIHYDROXIDE (GAS) **Cs2(OH)2**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	82.819	360.770	360.770	−687.850	0.000	−795.414	−687.850	−644.514	112.916
	300.00	82.915	361.283	360.772	−687.697	0.153	−796.082	−687.924	−644.245	112.173
	400.00	88.976	385.951	364.094	−679.107	8.743	−833.488	−695.764	−627.750	81.976
	500.00	94.499	406.419	370.568	−669.924	17.926	−873.134	−698.825	−610.382	63.766
	600.00	99.002	424.060	378.046	−660.242	27.608	−914.678	−701.443	−592.441	51.577
	700.00	102.709	439.608	385.752	−650.151	37.699	−957.876	−703.737	−574.089	42.839
	800.00	105.820	453.532	393.369	−639.720	48.130	−1002.545	−705.785	−555.426	36.266
	900.00	108.466	466.153	400.766	−629.002	58.848	−1048.539	−707.636	−536.518	31.139
	1000.00	110.730	477.701	407.890	−618.039	69.811	−1095.740	−843.599	−509.999	26.640
	1100.00	112.779	488.353	414.727	−606.861	80.989	−1144.050	−843.127	−476.661	22.635
	1200.00	114.582	498.245	421.280	−595.492	92.358	−1193.385	−842.543	−443.371	19.299
	1300.00	116.188	507.481	427.559	−583.952	103.898	−1243.677	−841.867	−410.133	16.479
	1400.00	117.629	516.145	433.580	−572.260	115.590	−1294.863	−841.115	−376.951	14.064
	1500.00	118.927	524.306	439.359	−560.431	127.419	−1346.889	−840.301	−343.824	11.973
	1600.00	120.096	532.019	444.912	−548.478	139.372	−1399.709	−839.440	−310.754	10.145
	1700.00	121.148	539.332	450.253	−536.415	151.435	−1453.280	−838.546	−277.738	8.534
	1800.00	122.091	546.284	455.396	−524.252	163.598	−1507.563	−837.634	−244.776	7.103
	1900.00	122.929	552.908	460.355	−512.001	175.849	−1562.525	−836.718	−211.864	5.825
	2000.00	123.668	559.233	465.142	−499.670	188.180	−1618.135	−835.813	−179.001	4.675

References

Phase	H / S	C_p
GAS	Ja1	Ja1

Cs2SO4 CESIUM SULFATE 361.874

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	135.143	211.920	211.920	−1443.020	0.000	−1506.204	−1443.020	−1323.544	231.879
	300.00	135.762	212.757	211.922	−1442.769	0.251	−1506.597	−1443.040	−1322.803	230.320
	400.00	151.294	254.443	217.503	−1428.244	14.776	−1530.021	−1449.591	−1281.211	167.309
	500.00	162.048	289.292	228.466	−1412.607	30.413	−1557.253	−1450.236	−1239.045	129.442
	600.00	176.816	320.086	241.210	−1395.695	47.325	−1587.746	−1449.431	−1196.852	104.195
	700.00	194.253	348.630	254.538	−1377.155	65.865	−1621.196	−1446.902	−1154.933	86.182
	800.00	212.464	375.759	268.007	−1356.819	86.201	−1657.426	−1442.789	−1113.486	72.703
	900.00	229.965	401.807	281.436	−1334.686	108.334	−1696.312	−1489.862	−1071.496	62.188
	940.00	236.509	411.949	286.774	−1325.356	117.664	−1712.588	−1486.498	−1052.975	58.513
			4.585		4.310					
SOL−B	940.00	184.889	416.534	286.774	−1321.046	121.974	−1712.588	−1482.188	−1052.975	58.513
	1000.00	194.179	428.259	294.912	−1309.674	133.346	−1737.932	−1614.069	−1018.237	53.187
	1100.00	209.664	447.492	307.912	−1289.482	153.538	−1781.723	−1606.895	−958.989	45.539
	1200.00	225.149	466.399	320.333	−1267.741	175.279	−1827.420	−1598.260	−900.458	39.196
	1278.00	237.227	480.954	329.693	−1249.708	193.312	−1864.368	−1590.502	−855.343	34.960
			27.926		35.690					
LIQ	1278.00	206.690	508.881	329.693	−1214.018	229.002	−1864.368	−1554.812	−855.343	34.960
	1300.00	206.690	512.408	332.755	−1209.471	233.549	−1875.602	−1553.170	−843.316	33.885
	1400.00	206.690	527.726	346.142	−1188.802	254.218	−1927.618	−1545.749	−788.991	29.438
	1500.00	206.690	541.986	358.728	−1168.133	274.887	−1981.112	−1538.392	−735.194	25.602
	1600.00	206.690	555.325	370.603	−1147.464	295.556	−2035.985	−1531.098	−681.885	22.261
	1700.00	206.690	567.856	381.841	−1126.795	316.225	−2092.150	−1523.870	−629.031	19.328
	1800.00	206.690	579.670	392.507	−1106.126	336.894	−2149.532	−1516.710	−576.601	16.733
	1900.00	206.690	590.845	402.654	−1085.457	357.563	−2208.063	−1509.625	−524.566	14.421
	2000.00	206.690	601.447	412.331	−1064.788	378.232	−2267.682	−1502.619	−472.902	12.351

References

Phase	H / S	C_p
SOL−A	Nb1	Pa3
SOL−B	Pa3	Pa3
LIQ	Pa3	Pa3

63.546

COPPER

Cu

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	24.443	33.164	33.164	0.000	0.000	−9.888	0.000	0.000	0.000
	300.00	24.464	33.315	33.164	0.045	0.045	−9.949	0.000	0.000	0.000
	400.00	25.318	40.481	34.136	2.538	2.538	−13.654	0.000	0.000	0.000
	500.00	25.912	46.196	35.995	5.100	5.100	−17.998	0.000	0.000	0.000
	600.00	26.477	50.971	38.104	7.720	7.720	−22.862	0.000	0.000	0.000
	700.00	26.995	55.092	40.243	10.394	10.394	−28.170	0.000	0.000	0.000
	800.00	27.494	58.731	42.331	13.120	13.120	−33.865	0.000	0.000	0.000
	900.00	28.032	61.999	44.338	15.895	15.895	−39.904	0.000	0.000	0.000
	1000.00	28.676	64.985	46.255	18.730	18.730	−46.255	0.000	0.000	0.000
	1100.00	29.456	67.753	48.085	21.635	21.635	−52.894	0.000	0.000	0.000
	1200.00	30.519	70.359	49.834	24.630	24.630	−59.800	0.000	0.000	0.000
	1300.00	32.136	72.861	51.509	27.757	27.757	−66.962	0.000	0.000	0.000
	1358.00	33.473	74.291	52.452	29.658	29.658	−71.229	0.000	0.000	0.000
			9.675		13.138					
LIQ	1358.00	32.844	83.966	52.452	42.796	42.796	−71.229	0.000	0.000	0.000
	1400.00	32.844	84.966	53.412	44.175	44.175	−74.777	0.000	0.000	0.000
	1500.00	32.844	87.232	55.592	47.460	47.460	−83.388	0.000	0.000	0.000
	1600.00	32.844	89.352	57.637	50.744	50.744	−92.219	0.000	0.000	0.000
	1700.00	32.844	91.343	59.561	54.029	54.029	−101.254	0.000	0.000	0.000
	1800.00	32.844	93.220	61.380	57.313	57.313	−110.483	0.000	0.000	0.000
	1900.00	32.844	94.996	63.103	60.598	60.598	−119.895	0.000	0.000	0.000
	2000.00	32.844	96.681	64.740	63.882	63.882	−129.480	0.000	0.000	0.000
	2100.00	32.844	98.283	66.299	67.166	67.166	−139.228	0.000	0.000	0.000
	2200.00	32.844	99.811	67.788	70.451	70.451	−149.134	0.000	0.000	0.000
	2300.00	32.844	101.271	69.212	73.735	73.735	−159.188	0.000	0.000	0.000
	2400.00	32.844	102.669	70.577	77.020	77.020	−169.386	0.000	0.000	0.000
	2500.00	32.844	104.010	71.888	80.304	80.304	−179.720	0.000	0.000	0.000
	2600.00	32.844	105.298	73.149	83.589	83.589	−190.186	0.000	0.000	0.000
	2700.00	32.844	106.538	74.362	86.873	86.873	−200.778	0.000	0.000	0.000
	2800.00	32.844	107.732	75.533	90.158	90.158	−211.492	0.000	0.000	0.000
	2843.26	32.844	108.236	76.027	91.578	91.578	−216.164	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks	
SOL	Ja2	Ja1		
LIQ	Ja2	Ja1	Ja2	BPT= 2843.261, L= 300.677 kJ

Cu[g] COPPER (GAS) 63.546

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	20.786	166.397	166.397	337.600	0.000	287.989	337.600	297.877	−52.187
	300.00	20.786	166.526	166.397	337.638	0.038	287.681	337.593	297.630	−51.822
	400.00	20.786	172.505	167.213	339.717	2.117	270.715	337.179	284.369	−37.135
	500.00	20.786	177.144	168.752	341.796	4.196	253.224	336.695	271.222	−28.334
	600.00	20.786	180.933	170.476	343.874	6.274	235.314	336.154	258.177	−22.476
	700.00	20.786	184.138	172.205	345.953	8.353	217.057	335.559	245.227	−18.299
	800.00	20.786	186.913	173.874	348.032	10.432	198.501	334.912	232.366	−15.172
	900.00	20.786	189.361	175.461	350.110	12.510	179.685	334.215	219.589	−12.745
	1000.00	20.786	191.551	176.963	352.189	14.589	160.637	333.459	206.892	−10.807
	1100.00	20.789	193.533	178.380	354.267	16.667	141.381	332.633	194.275	−9.225
	1200.00	20.795	195.342	179.720	356.347	18.747	121.936	331.716	181.737	−7.911
	1300.00	20.805	197.007	180.986	358.427	20.827	102.318	330.670	169.280	−6.802
	1400.00	20.823	198.549	182.186	360.508	22.908	82.539	316.333	157.316	−5.870
	1500.00	20.856	199.987	183.326	362.592	24.992	62.612	315.132	146.000	−5.084
	1600.00	20.909	201.334	184.409	364.680	27.080	42.545	313.935	134.763	−4.400
	1700.00	20.986	202.604	185.443	366.774	29.174	22.347	312.746	123.602	−3.798
	1800.00	21.092	203.806	186.430	368.878	31.278	2.026	311.565	112.510	−3.265
	1900.00	21.231	204.950	187.375	370.994	33.394	−18.412	310.396	101.483	−2.790
	2000.00	21.405	206.044	188.281	373.125	35.525	−38.962	309.243	90.517	−2.364
	2100.00	21.623	207.093	189.152	375.276	37.676	−59.619	308.110	79.609	−1.980
	2200.00	21.879	208.105	189.991	377.451	39.851	−80.380	307.000	68.754	−1.632
	2300.00	22.174	209.084	190.800	379.653	42.053	−101.239	305.918	57.949	−1.316
	2400.00	22.509	210.034	191.581	381.887	44.287	−122.195	304.867	47.191	−1.027
	2500.00	22.880	210.961	192.338	384.156	46.556	−143.245	303.852	36.475	−0.762
	2600.00	23.284	211.866	193.072	386.464	48.864	−164.387	302.876	25.799	−0.518
	2700.00	23.716	212.753	193.784	388.814	51.214	−185.618	301.941	15.161	−0.293
	2800.00	24.174	213.623	194.477	391.208	53.608	−206.937	301.051	4.555	−0.085
	2900.00	24.652	214.480	195.152	393.649	56.049	−228.342	0.000	0.000	0.000
	3000.00	25.146	215.324	195.811	396.139	58.539	−249.832	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Ja2	Ja1

265.560

TRICOPPER ARSENIDE **Cu3As**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol	]		[−]
SOL	298.15	93.080	137.235	137.235	−11.715	0.000	−52.632	−11.715	−12.322	2.159
	300.00	93.136	137.811	137.237	−11.543	0.172	−52.886	−11.724	−12.326	2.146
	400.00	96.148	165.017	140.926	−2.079	9.636	−68.085	−12.245	−12.449	1.626
	500.00	99.161	186.796	147.992	7.687	19.402	−85.711	−12.733	−12.442	1.300
	600.00	102.173	205.141	156.027	17.754	29.469	−105.331	−13.147	−12.343	1.075
	700.00	105.186	221.117	164.208	28.122	39.837	−126.661	−13.481	−12.182	0.909
	800.00	108.198	235.360	172.228	38.791	50.506	−149.497	−13.719	−11.979	0.782
	900.00	111.211	248.278	179.971	49.761	61.476	−173.689	−13.858	−11.752	0.682
	1000.00	114.223	260.151	187.403	61.033	72.748	−199.118	−13.900	−11.515	0.601
	1100.00	117.236	271.179	194.523	72.606	84.321	−225.691	−13.879	−11.277	0.536

References

Phase	H / S	C_p	Remarks
SOL	Nb1/e	e	Hu1 MPT= 1100.

329.557

TRICOPPER ARSENATE **Cu3AsO4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol	]		[−]
SOL	298.15	176.361	255.977	255.977	−710.360	0.000	−786.680	−710.360	−624.041	109.329
	300.00	176.547	257.069	255.980	−710.034	0.326	−787.154	−710.324	−623.506	108.562
	400.00	185.091	309.086	263.015	−691.932	18.428	−815.566	−708.149	−594.883	77.684
	500.00	192.138	351.160	276.567	−673.063	37.297	−848.643	−705.652	−566.850	59.218
	600.00	198.595	386.768	292.040	−653.523	56.837	−885.584	−702.912	−539.343	46.954
	663.00	202.511	406.790	302.005	−640.888	69.472	−910.590	−701.074	−522.261	41.147

References

Phase	H / S	C_p
SOL	G1	G1

Cu3(AsO4)2 TRICOPPER DIARSENATE 468.476

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		J / (K mol)			kJ / mol					
SOL	298.15	258.210	298.612	298.612	−1522.558	0.000	−1611.589	−1522.558	−1315.976	230.553
	300.00	258.845	300.211	298.617	−1522.080	0.478	−1612.143	−1522.524	−1314.694	228.909
	400.00	283.696	378.444	309.115	−1494.827	27.731	−1646.204	−1519.647	−1245.802	162.685
	500.00	299.064	443.501	329.671	−1465.643	56.915	−1687.394	−1515.520	−1177.800	123.044
	600.00	310.699	499.092	353.387	−1435.135	87.423	−1734.590	−1510.753	−1110.696	96.695
	700.00	320.572	547.744	377.748	−1403.561	118.997	−1786.982	−1505.576	−1044.424	77.936
	800.00	329.506	591.141	401.758	−1371.051	151.507	−1843.964	−1500.054	−978.918	63.917
	900.00	337.893	630.440	425.017	−1337.678	184.880	−1905.074	−1494.194	−914.125	53.054
	924.00	339.850	639.358	430.469	−1329.545	193.013	−1920.312	−1492.735	−898.675	50.803

References

Phase	H / S	C_p
SOL	G1	G1

143.450 COPPER MONOBROMIDE **CuBr**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL−A	298.15	54.744	96.102	96.102	−105.604	0.000	−134.257	−105.604	−101.678	17.814
	300.00	54.810	96.441	96.103	−105.503	0.101	−134.435	−105.618	−101.654	17.700
	400.00	57.513	112.605	98.289	−99.878	5.726	−144.920	−119.727	−97.357	12.714
	500.00	60.308	125.722	102.503	−93.994	11.610	−156.855	−118.252	−91.931	9.604
	600.00	79.155	136.897	107.287	−87.838	17.766	−169.976	−116.574	−86.796	7.556
	657.00	139.275	146.460	110.238	−81.806	23.798	−178.030	−113.124	−84.100	6.686
			7.005		4.602					
SOL−B	657.00	73.220	153.465	110.238	−77.204	28.400	−178.030	−108.522	−84.100	6.686
	700.00	73.220	158.107	113.037	−74.056	31.548	−184.730	−107.334	−82.539	6.159
	741.00	73.220	162.274	115.648	−71.054	34.550	−191.299	−106.211	−81.119	5.718
			2.880		2.134					
SOL−C	741.00	58.158	165.154	115.648	−68.920	36.684	−191.299	−104.077	−81.119	5.718
	759.00	58.158	166.550	116.838	−67.873	37.731	−194.284	−103.858	−80.564	5.544
			6.725		5.104					
LIQ	759.00	63.329	173.275	116.838	−62.769	42.835	−194.284	−98.754	−80.564	5.544
	800.00	62.182	176.576	119.816	−60.196	45.408	−201.457	−98.073	−79.600	5.197
	900.00	59.760	183.755	126.532	−54.103	51.501	−219.483	−96.635	−77.380	4.491
	1000.00	57.869	189.949	132.571	−48.226	57.378	−238.175	−95.475	−75.305	3.934
	1100.00	56.509	195.396	138.040	−42.512	63.092	−257.448	−94.552	−73.335	3.482
	1200.00	55.680	200.274	143.026	−36.907	68.697	−277.236	−93.833	−71.439	3.110
	1300.00	55.383	204.715	147.603	−31.358	74.246	−297.488	−93.303	−69.596	2.796
	1400.00	55.619	208.825	151.831	−25.812	79.792	−318.168	−106.072	−67.380	2.514
	1500.00	56.387	212.686	155.761	−20.217	85.387	−339.245	−105.659	−64.630	2.251

References

Phase	H / S	C_p
SOL−A	Pa2	Pa2
SOL−B	Pa2	Pa2
SOL−C	Pa2	Pa2
LIQ	Pa2	Pa2

CuBr[g] COPPER MONOBROMIDE (GAS) 143.450

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	36.154	248.300	248.300	122.591	0.000	48.560	122.591	81.139	−14.215
	300.00	36.171	248.524	248.301	122.658	0.067	48.101	122.543	80.882	−14.083
	400.00	36.806	259.028	249.729	126.311	3.720	22.700	106.462	70.262	−9.175
	500.00	37.132	267.280	252.443	130.009	7.418	−3.631	105.752	61.293	−6.403
	600.00	37.336	274.069	255.498	133.733	11.142	−30.708	104.997	52.472	−4.568
	700.00	37.483	279.836	258.574	137.475	14.884	−58.411	104.196	43.780	−3.267
	800.00	37.599	284.849	261.552	141.229	18.638	−86.650	103.352	35.207	−2.299
	900.00	37.697	289.283	264.391	144.994	22.403	−115.361	102.462	26.741	−1.552
	1000.00	37.784	293.260	267.083	148.768	26.177	−144.492	101.519	18.378	−0.960
	1100.00	37.864	296.865	269.629	152.551	29.960	−174.001	100.510	10.112	−0.480
	1200.00	37.939	300.163	272.038	156.341	33.750	−203.854	99.415	1.942	−0.085
	1300.00	38.011	303.202	274.320	160.138	37.547	−234.025	98.193	−6.133	0.246
	1400.00	38.080	306.022	276.485	163.943	41.352	−264.488	83.683	−13.700	0.511
	1500.00	38.147	308.651	278.542	167.754	45.163	−295.223	82.312	−20.608	0.718
	1600.00	38.213	311.115	280.502	171.572	48.981	−326.212	80.944	−27.425	0.895
	1700.00	38.278	313.434	282.372	175.397	52.806	−357.441	79.580	−34.156	1.049
	1800.00	38.342	315.624	284.159	179.228	56.637	−388.895	78.220	−40.807	1.184
	1900.00	38.405	317.698	285.870	183.065	60.474	−420.562	76.864	−47.383	1.303
	2000.00	38.467	319.670	287.511	186.909	64.318	−452.431	75.512	−53.887	1.407

References

Phase	H / S	C_p
GAS	Pa2	Pa2

CuBr2 COPPER DIBROMIDE 223.354

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	75.740	128.867	128.867	−138.490	0.000	−176.912	−138.490	−121.643	21.311
	300.00	75.776	129.336	128.869	−138.350	0.140	−177.151	−138.535	−121.538	21.162
	400.00	77.230	151.354	131.861	−130.693	7.797	−191.234	−167.853	−109.763	14.334
	500.00	78.182	168.695	137.554	−122.920	15.570	−207.267	−166.335	−95.417	9.968
	600.00	78.936	183.018	143.972	−115.063	23.427	−224.873	−164.815	−81.376	7.084

References

Phase	H / S	C_p
SOL	Pa2	Pa2

430.350

TRICOPPER TRIBROMIDE (GAS) **Cu3Br3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	127.853	451.981	451.981	−151.461	0.000	−286.219	−151.461	−188.484	33.022
	300.00	127.917	452.772	451.984	−151.224	0.237	−287.056	−151.570	−188.713	32.858
	400.00	130.167	489.926	457.034	−138.304	13.157	−334.275	−197.852	−191.587	25.019
	500.00	131.227	519.098	466.634	−125.229	26.232	−384.778	−198.002	−190.006	19.850
	600.00	131.818	543.081	477.436	−112.074	39.387	−437.923	−198.283	−188.383	16.400
	700.00	132.187	563.430	488.304	−98.873	52.588	−493.274	−198.708	−186.701	13.932
	800.00	132.439	581.099	498.823	−85.641	65.820	−550.520	−199.273	−184.949	12.076
	900.00	132.622	596.709	508.849	−72.387	79.074	−609.425	−199.982	−183.117	10.628
	1000.00	132.763	610.690	518.346	−59.118	92.343	−669.807	−200.864	−181.198	9.465
	1100.00	132.875	623.349	527.326	−45.835	105.626	−731.519	−201.957	−179.180	8.509
	1200.00	132.969	634.915	535.816	−32.543	118.918	−794.441	−203.320	−177.052	7.707
	1300.00	133.049	645.561	543.854	−19.242	132.219	−858.471	−205.078	−174.795	7.023

References

Phase	H / S	C_p
GAS	Pa2	Pa2

89.564

COPPER CYANIDE **CuCN**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	61.024	89.998	89.998	94.977	0.000	68.144	94.977	108.308	−18.975
	300.00	62.196	90.379	89.999	95.091	0.114	67.977	95.003	108.390	−18.872
	400.00	66.740	110.629	92.737	102.134	7.157	57.882	97.057	112.536	−14.696
	500.00	70.252	124.987	97.796	108.572	13.595	46.079	98.133	116.278	−12.148
	600.00	73.113	138.053	103.443	115.743	20.766	32.911	99.612	119.768	−10.427
	700.00	75.703	149.521	109.223	123.186	28.209	18.521	101.081	123.012	−9.179
	746.00	76.803	154.374	111.858	126.694	31.717	11.531	101.761	124.431	−8.713
			16.826		12.552					
LIQ	746.00	83.680	171.200	111.858	139.246	44.269	11.531	114.313	124.431	−8.713
	800.00	83.680	177.048	116.064	143.765	48.788	2.126	115.456	125.123	−8.170
	900.00	83.680	186.904	123.398	152.133	57.156	−16.081	117.427	126.211	−7.325
	1000.00	83.680	195.721	130.197	160.501	65.524	−35.220	119.221	127.089	−6.638
	1100.00	83.680	203.696	136.522	168.869	73.892	−55.197	120.847	127.796	−6.069
	1200.00	83.680	210.977	142.428	177.237	82.260	−75.936	122.299	128.362	−5.587
	1300.00	83.680	217.675	147.962	185.605	90.628	−97.373	123.552	128.815	−5.176
	1400.00	83.680	223.877	153.166	193.973	98.996	−119.455	111.455	129.586	−4.835
	1500.00	83.680	229.650	158.074	202.341	107.364	−142.134	112.445	130.846	−4.556

References

Phase	H / S	C_p
SOL	Ja1	Ja1
LIQ	Ja1	e

CuCl COPPER MONOCHLORIDE 98.999

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	52.528	87.743	87.743	−155.645	0.000	−181.805	−155.645	−138.657	24.292
	300.00	52.586	88.068	87.744	−155.548	0.097	−181.968	−155.624	−138.551	24.124
	400.00	55.016	103.352	89.814	−150.230	5.415	−191.571	−154.533	−133.023	17.371
	500.00	57.978	116.072	93.830	−144.524	11.121	−202.560	−153.175	−127.798	13.351
	600.00	65.271	126.942	98.454	−138.552	17.093	−214.718	−151.640	−122.858	10.696
	685.00	113.287	137.994	102.626	−131.418	24.227	−225.944	−148.338	−118.958	9.071
			7.115		4.874					
SOL−B	685.00	79.496	145.109	102.626	−126.544	29.101	−225.944	−149.464	−118.958	9.071
	696.00	79.496	146.376	103.307	−125.670	29.975	−227.547	−143.089	−118.568	8.898
			10.178		7.084					
LIQ	696.00	62.044	156.554	103.307	−118.586	37.059	−227.547	−136.005	−118.568	8.898
	700.00	61.894	156.909	103.613	−118.338	37.307	−228.174	−135.939	−118.468	8.840
	800.00	58.995	164.968	110.794	−112.306	43.339	−244.280	−134.485	−116.075	7.579
	900.00	57.277	171.808	117.202	−106.500	49.145	−261.127	−133.317	−113.846	6.607
	1000.00	56.293	177.787	122.968	−100.826	54.819	−278.613	−132.348	−111.737	5.837
	1100.00	55.788	183.125	128.198	−95.225	60.420	−296.663	−131.529	−109.716	5.210
	1200.00	55.610	187.970	132.981	−89.658	65.987	−315.222	−130.839	−107.765	4.691
	1300.00	55.661	192.422	137.384	−84.096	71.549	−334.244	−130.290	−105.865	4.254
	1400.00	55.881	196.554	141.465	−78.520	77.125	−353.695	−143.023	−103.595	3.865
	1500.00	56.224	200.420	145.267	−72.915	82.730	−373.546	−142.598	−100.794	3.510
	1600.00	56.661	204.063	148.829	−67.272	88.373	−393.772	−142.137	−98.021	3.200
	1700.00	57.170	207.513	152.181	−61.581	94.064	−414.352	−141.632	−95.279	2.928

References

Phase	H / S	C_p
SOL−A	Pa2	Pa2
SOL−B	Pa2	Pa2
LIQ	Pa2	Pa2

98.999

COPPER MONOCHLORIDE (GAS) **CuCl[g]**

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	35.065	237.192	237.192	91.211	0.000	20.492	91.211	63.641	–11.150
	300.00	35.096	237.409	237.192	91.276	0.065	20.053	91.199	63.470	–11.051
	400.00	36.204	247.679	238.585	94.848	3.637	–4.223	90.545	54.325	–7.094
	500.00	36.744	255.821	241.246	98.499	7.288	–29.412	89.848	45.349	–4.738
	600.00	37.060	262.551	244.252	102.190	10.979	–55.340	89.102	36.519	–3.179
	700.00	37.271	268.280	247.286	105.907	14.696	–81.889	88.306	27.817	–2.076
	800.00	37.425	273.268	250.229	109.642	18.431	–108.972	87.464	19.233	–1.256
	900.00	37.546	277.683	253.039	113.391	22.180	–136.524	86.574	10.757	–0.624
	1000.00	37.648	281.644	255.704	117.151	25.940	–164.493	85.629	2.383	–0.124
	1100.00	37.736	285.237	258.228	120.920	29.709	–192.840	84.616	–5.893	0.280
	1200.00	37.815	288.524	260.618	124.698	33.487	–221.531	83.516	–14.074	0.613
	1300.00	37.887	291.553	262.883	128.483	37.272	–250.536	82.288	–22.157	0.890
	1400.00	37.955	294.364	265.032	132.275	41.064	–279.834	67.771	–29.734	1.109
	1500.00	38.020	296.984	267.076	136.074	44.863	–309.403	66.391	–36.650	1.276
	1600.00	38.081	299.440	269.023	139.879	48.668	–339.225	65.014	–43.475	1.419
	1700.00	38.141	301.751	270.881	143.690	52.479	–369.286	63.639	–50.213	1.543
	1800.00	38.200	303.932	272.657	147.507	56.296	–399.571	62.266	–56.871	1.650
	1900.00	38.257	305.999	274.358	151.330	60.119	–430.069	60.896	–63.452	1.744
	2000.00	38.313	307.963	275.989	155.158	63.947	–460.768	59.528	–69.961	1.827

References

Phase	H / S	C_p
GAS	Pa2	Pa2

134.451

COPPER DICHLORIDE **CuCl2**

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL–A	298.15	71.865	108.073	108.073	–217.986	0.000	–250.208	–217.986	–173.798	30.449
	300.00	71.982	108.518	108.074	–217.853	0.133	–250.408	–217.961	–173.524	30.213
	400.00	76.322	129.898	110.960	–210.411	7.575	–262.370	–216.479	–158.929	20.754
	500.00	78.639	147.199	116.533	–202.653	15.333	–276.253	–214.854	–144.727	15.120
	600.00	80.159	161.679	122.884	–194.709	23.277	–291.716	–213.165	–130.860	11.392
	675.00	81.041	171.173	127.731	–188.663	29.323	–304.204	–211.874	–120.649	9.336
			1.047		0.707					
SOL–B	675.00	82.425	172.220	127.731	–187.956	30.030	–304.204	–211.167	–120.649	9.336
	700.00	82.425	175.218	129.374	–185.895	32.091	–308.548	–210.702	–117.305	8.753
	800.00	82.425	186.224	135.807	–177.653	40.333	–326.632	–208.890	–104.087	6.796
	900.00	82.425	195.932	141.959	–169.410	48.576	–345.749	–207.149	–91.092	5.287

References

Phase	H / S	C_p
SOL–A	Pa2	Pa2
SOL–B	Pa2	Pa2

Cu3Cl3[g] TRICOPPER TRICHLORIDE (GAS) 296.996

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	124.439	429.518	429.518	−246.438	0.000	−374.499	−246.438	−245.052	42.932
	300.00	124.541	430.288	429.520	−246.208	0.230	−375.294	−246.438	−245.043	42.666
	400.00	128.130	466.681	434.457	−233.549	12.889	−420.221	−246.458	−244.578	31.939
	500.00	129.805	495.473	443.882	−220.643	25.795	−468.379	−246.595	−244.095	25.500
	600.00	130.727	519.228	454.518	−207.612	38.826	−519.149	−246.876	−243.571	21.205
	700.00	131.293	539.425	465.241	−194.509	51.929	−572.107	−247.311	−242.987	18.132
	800.00	131.670	556.983	475.635	−181.360	65.078	−626.946	−247.896	−242.332	15.823
	900.00	131.936	572.508	485.553	−168.179	78.259	−683.436	−248.630	−241.594	14.022
	1000.00	132.134	586.419	494.956	−154.975	91.463	−741.394	−249.541	−240.765	12.576
	1100.00	132.287	599.020	503.853	−141.753	104.685	−800.676	−250.666	−239.835	11.389
	1200.00	132.410	610.536	512.270	−128.518	117.920	−861.162	−252.063	−238.791	10.394
	1300.00	132.511	621.139	520.242	−115.272	131.166	−922.753	−253.856	−237.615	9.548
	1400.00	132.597	630.962	527.804	−102.017	144.421	−985.364	−295.528	−235.064	8.770
	1500.00	132.671	640.113	534.990	−88.753	157.685	−1048.923	−297.801	−230.665	8.032
	1600.00	132.736	648.678	541.831	−75.483	170.955	−1113.367	−300.078	−226.115	7.382
	1700.00	132.795	656.727	548.355	−62.206	184.232	−1178.641	−302.359	−221.423	6.804
	1800.00	132.848	664.318	554.588	−48.924	197.514	−1244.697	−304.646	−216.596	6.285
	1900.00	132.898	671.503	560.554	−35.636	210.802	−1311.491	−306.938	−211.642	5.818
	2000.00	132.943	678.320	566.274	−22.344	224.094	−1378.985	−309.236	−206.567	5.395

References

Phase	H / S	C_p
GAS	Pa2	Pa2

CuF COPPER MONOFLUORIDE 82.544

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	49.909	64.852	64.852	−280.328	0.000	−299.664	−280.328	−259.544	45.471
	300.00	50.057	65.161	64.853	−280.236	0.092	−299.784	−280.310	−259.415	45.168
	400.00	55.410	80.397	66.894	−274.927	5.401	−307.086	−279.101	−252.623	32.989
	500.00	58.107	93.079	70.900	−269.238	11.090	−315.778	−277.656	−246.167	25.717
	600.00	59.760	103.830	75.515	−263.339	16.989	−325.637	−276.113	−240.013	20.895
	700.00	60.919	113.133	80.240	−257.302	23.026	−336.496	−274.526	−234.122	17.470
	800.00	61.816	121.329	84.874	−251.164	29.164	−348.227	−272.916	−228.459	14.917
	900.00	62.559	128.654	89.338	−244.944	35.384	−360.733	−271.295	−223.000	12.943
	1000.00	63.208	135.279	93.606	−238.655	41.673	−373.934	−269.681	−217.720	11.373
	1100.00	63.794	141.331	97.674	−232.305	48.023	−387.769	−268.089	−212.601	10.096
	1200.00	64.338	146.906	101.547	−225.898	54.430	−402.185	−266.541	−207.626	9.038
	1300.00	64.853	152.076	105.238	−219.438	60.890	−417.137	−265.082	−202.776	8.148
	1400.00	65.346	156.900	108.758	−212.928	67.400	−432.589	−276.871	−197.628	7.374
	1500.00	65.823	161.425	112.119	−206.370	73.958	−448.507	−275.486	−192.016	6.687

References

Phase	H / S	C_p
SOL	Ja1	K2

82.544 COPPER MONOFLUORIDE (GAS) **CuF**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	33.379	226.464	226.464	−12.552	0.000	−80.072	−12.552	−39.953	7.000
	300.00	33.414	226.670	226.464	−12.490	0.062	−80.491	−12.564	−40.123	6.986
	400.00	34.878	236.501	227.795	−9.069	3.483	−103.670	−13.243	−49.207	6.426
	500.00	35.763	244.387	230.351	−5.534	7.018	−127.727	−13.952	−58.117	6.071
	600.00	36.327	250.961	233.253	−1.927	10.625	−152.504	−14.701	−66.880	5.822
	700.00	36.711	256.591	236.195	1.726	14.278	−177.888	−15.498	−75.514	5.635
	800.00	36.989	261.512	239.058	5.411	17.963	−203.799	−16.340	−84.031	5.487
	900.00	37.201	265.882	241.800	9.121	21.673	−230.172	−17.230	−92.439	5.365
	1000.00	37.370	269.810	244.408	12.850	25.402	−256.960	−18.176	−100.746	5.262
	1100.00	37.509	273.379	246.882	16.594	29.146	−284.122	−19.190	−108.954	5.174
	1200.00	37.628	276.648	249.228	20.351	32.903	−311.626	−20.292	−117.067	5.096
	1300.00	37.732	279.664	251.455	24.119	36.671	−339.444	−21.524	−125.083	5.026
	1400.00	37.825	282.463	253.571	27.897	40.449	−367.552	−36.046	−132.591	4.947
	1500.00	37.910	285.076	255.585	31.684	44.236	−395.930	−37.432	−139.439	4.856
	1600.00	37.988	287.525	257.506	35.479	48.031	−424.561	−38.817	−146.194	4.773
	1700.00	38.061	289.830	259.340	39.281	51.833	−453.430	−40.199	−152.863	4.697
	1800.00	38.131	292.008	261.095	43.091	55.643	−482.523	−41.581	−159.450	4.627
	1900.00	38.197	294.071	262.777	46.907	59.459	−511.828	−42.960	−165.961	4.563
	2000.00	38.260	296.032	264.391	50.730	63.282	−541.334	−44.338	−172.399	4.503

References

Phase	H / S	C_p
GAS	Ja1	Ja1

CuF2 COPPER DIFLUORIDE 101.543

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[	J / (K mol)	]	[		kJ / mol		]	[−]
SOL	298.15	65.557	77.446	77.446	−538.899	0.000	−561.989	−538.899	−491.638	86.133
	300.00	65.683	77.852	77.447	−538.778	0.121	−562.133	−538.881	−491.345	85.551
	400.00	72.384	97.686	80.106	−531.867	7.032	−570.941	−537.677	−475.670	62.116
	500.00	77.738	114.440	85.340	−524.349	14.550	−581.569	−536.084	−460.345	48.092
	600.00	81.923	128.997	91.429	−516.358	22.541	−593.756	−534.186	−445.371	38.773
	700.00	84.787	141.849	97.732	−508.017	30.882	−607.312	−532.069	−430.733	32.142
	800.00	87.050	153.324	103.977	−499.421	39.478	−622.080	−529.804	−416.410	27.189
	900.00	88.863	163.686	110.045	−490.622	48.277	−637.939	−527.429	−402.377	23.353
	1000.00	90.348	173.128	115.888	−481.659	57.240	−654.787	−524.981	−388.613	20.299
	1100.00	91.595	181.799	121.491	−472.560	66.339	−672.539	−522.494	−375.097	17.812
	1109.00	91.697	182.546	121.984	−471.736	67.163	−674.179	−522.269	−373.892	17.611
			49.801		55.229					
LIQ	1109.00	100.416	232.347	121.984	−416.507	122.392	−674.179	−467.040	−373.892	17.611
	1200.00	100.416	240.266	130.657	−407.369	131.530	−695.687	−464.026	−366.370	15.948
	1300.00	100.416	248.303	139.402	−397.327	141.572	−720.121	−460.857	−358.361	14.399
	1400.00	100.416	255.745	147.449	−387.285	151.614	−745.328	−470.997	−350.184	13.066
	1500.00	100.416	262.673	154.903	−377.244	161.655	−771.253	−468.017	−341.658	11.898
	1600.00	100.416	269.154	161.843	−367.202	171.697	−797.848	−465.049	−333.331	10.882
	1700.00	100.416	275.241	168.336	−357.161	181.738	−825.071	−462.094	−325.189	9.992
	1800.00	100.416	280.981	174.436	−347.119	191.780	−852.885	−459.149	−317.221	9.206
	1900.00	100.416	286.410	180.188	−337.077	201.822	−881.257	−456.215	−309.416	8.506
	1943.80	100.416	288.699	182.608	−332.679	206.220	−893.852	−454.933	−306.047	8.224

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja1	BPT= 1943.8, L= 81.132 kJ

101.543 COPPER DIFLUORIDE (GAS) **CuF2**[g]

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[	kJ / mol	]			[–]
GAS	298.15	47.994	267.090	267.090	–266.939	0.000	–346.572	–266.939	–276.221	48.393
	300.00	48.061	267.388	267.091	–266.850	0.089	–347.066	–266.953	–276.278	48.104
	400.00	51.253	281.677	269.018	–261.875	5.064	–374.546	–267.685	–279.274	36.470
	500.00	53.334	293.356	272.753	–256.638	10.301	–403.316	–268.373	–282.092	29.470
	600.00	54.639	303.204	277.029	–251.234	15.705	–433.157	–269.062	–284.771	24.792
	700.00	55.484	311.694	281.389	–245.725	21.214	–463.911	–269.777	–287.333	21.441
	800.00	56.057	319.143	285.652	–240.146	26.793	–495.461	–270.530	–289.790	18.921
	900.00	56.465	325.770	289.748	–234.519	32.420	–527.713	–271.326	–292.151	16.956
	1000.00	56.773	331.736	293.654	–228.857	38.082	–560.593	–272.178	–294.419	15.379
	1100.00	57.019	337.159	297.366	–223.167	43.772	–594.042	–273.100	–296.599	14.084
	1200.00	57.230	342.130	300.892	–217.454	49.485	–628.010	–274.111	–298.692	13.002
	1300.00	57.423	346.718	304.243	–211.721	55.218	–662.455	–275.251	–300.695	12.082
	1400.00	57.608	350.981	307.431	–205.970	60.969	–697.342	–289.681	–302.198	11.275
	1500.00	57.793	354.961	310.469	–200.200	66.739	–732.642	–290.973	–303.047	10.553
	1600.00	57.985	358.697	313.367	–194.411	72.528	–768.327	–292.258	–303.810	9.918
	1700.00	58.188	362.219	316.138	–188.602	78.337	–804.374	–293.536	–304.493	9.356
	1800.00	58.405	365.551	318.792	–182.773	84.166	–840.764	–294.803	–305.101	8.854
	1900.00	58.637	368.715	321.337	–176.921	90.018	–877.479	–296.058	–305.639	8.403
	2000.00	58.888	371.729	323.781	–171.045	95.894	–914.502	–297.299	–306.111	7.995

References

Phase	H / S	C_p
GAS	Ja1	Ja1

CuFeS2 COPPER IRON DISULFIDE 183.525

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[	kJ / mol	]			[−]
SOL−A	298.15	96.646	124.976	124.976	−190.372	0.000	−227.634	−190.372	−190.497	33.374
	300.00	96.822	125.574	124.978	−190.193	0.179	−227.865	−190.369	−190.498	33.169
	400.00	104.903	154.591	128.880	−180.087	10.285	−241.924	−194.545	−190.398	24.863
	500.00	111.520	178.726	136.501	−169.259	21.113	−258.622	−196.935	−189.123	19.758
	600.00	117.561	199.599	145.315	−157.802	32.570	−277.561	−198.337	−187.407	16.315
	700.00	123.330	218.156	154.419	−145.756	44.616	−298.465	−198.914	−185.534	13.845
	800.00	128.953	234.993	163.454	−133.141	57.231	−321.135	−199.360	−183.593	11.987
	830.00	130.622	239.771	166.126	−129.247	61.125	−328.257	−199.544	−182.999	11.517
			12.148		10.083					
SOL−B	830.00	89.357	251.919	166.126	−119.164	71.208	−328.257	−189.461	−182.999	11.517
	900.00	218.505	264.312	173.220	−108.389	81.983	−346.270	−293.829	−180.138	10.455
	930.00	273.855	272.379	176.284	−101.003	89.369	−354.316	−289.722	−176.412	9.908
			0.000		0.000					
SOL−C	930.00	172.464	272.379	176.284	−101.003	89.369	−354.316	−289.722	−176.412	9.908
	1000.00	172.464	284.895	183.454	−88.931	101.441	−373.826	−285.652	−168.037	8.777
	1100.00	172.464	301.333	193.435	−71.685	118.687	−403.151	−280.545	−156.509	7.432
	1200.00	172.464	316.339	203.061	−54.438	135.934	−434.045	−275.119	−145.493	6.333

References

Phase	H / S	C_p
SOL−A	K2	K2
SOL−B	K2	K2
SOL−C	K2	K2

501.841 PENTACOPPER IRON TETRASULFIDE **Cu5FeS4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	245.603	362.334	362.334	−380.326	0.000	−488.356	−380.326	−392.553	68.774
	300.00	245.952	363.855	362.339	−379.871	0.455	−489.028	−380.312	−392.629	68.363
	400.00	263.375	437.054	372.202	−354.385	25.941	−529.207	−388.242	−396.509	51.779
	485.00	276.980	489.081	388.235	−331.416	48.910	−568.620	−391.795	−397.985	42.863
			12.336		5.983					
SOL−B	485.00	357.669	501.417	388.235	−325.433	54.893	−568.620	−385.812	−397.985	42.863
	500.00	373.171	512.546	391.797	−319.951	60.375	−576.224	−385.080	−398.372	41.618
	540.00	414.509	542.836	401.858	−304.198	76.128	−597.329	−381.708	−399.553	38.649
			0.000		0.000					
SOL−C	540.00	341.953	542.836	401.858	−304.198	76.128	−597.329	−381.708	−399.553	38.649
	600.00	332.001	578.302	417.769	−284.006	96.320	−630.987	−379.624	−401.650	34.967
	700.00	324.522	628.805	444.416	−251.254	129.072	−691.417	−376.812	−405.557	30.263
	800.00	323.790	672.035	470.227	−218.880	161.446	−756.508	−375.120	−409.794	26.757
	900.00	326.983	710.327	494.816	−186.366	193.960	−825.660	−585.342	−409.577	23.771
	1000.00	332.611	745.052	518.129	−153.403	226.923	−898.455	−578.667	−390.413	20.393
	1100.00	339.832	777.082	540.232	−119.791	260.535	−974.581	−572.500	−371.869	17.659
	1200.00	348.136	807.001	561.229	−85.400	294.926	−1053.801	−565.609	−353.951	15.407

References

Phase	H / S	C_p
SOL−A	K2	K2
SOL−B	K2	K2
SOL−C	K2	K2

CuI — COPPER MONOIODIDE — 190.450

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL−A	298.15	54.056	96.596	96.596	−67.781	0.000	−96.581	−67.781	−69.379	12.155
	300.00	54.140	96.931	96.597	−67.681	0.100	−96.760	−67.777	−69.389	12.082
	400.00	57.185	113.023	98.770	−62.080	5.701	−107.289	−75.488	−69.692	9.101
	500.00	60.570	126.027	102.958	−56.246	11.535	−119.260	−96.314	−66.250	6.921
	600.00	76.984	138.232	107.810	−49.528	18.253	−132.467	−94.090	−60.421	5.260
	642.00	128.815	145.174	110.010	−45.206	22.575	−138.408	−91.674	−58.134	4.730
			4.822		3.096					
SOL−B	642.00	138.490	149.997	110.010	−42.110	25.671	−138.408	−88.578	−58.134	4.730
	680.00	138.490	157.960	112.470	−36.847	30.934	−144.260	−85.049	−56.434	4.335
			3.894		2.648					
SOL−C	680.00	68.618	161.855	112.470	−34.199	33.582	−144.260	−82.401	−56.434	4.335
	700.00	68.618	163.844	113.909	−32.827	34.954	−147.517	−81.945	−55.677	4.155
	800.00	68.618	173.006	120.736	−25.965	41.816	−164.370	−79.694	−52.079	3.400
	868.00	68.618	178.604	125.053	−21.299	46.482	−176.327	−78.195	−49.794	2.996
			9.139		7.933					
LIQ	868.00	66.538	187.743	125.053	−13.366	54.415	−176.327	−70.262	−49.794	2.996
	900.00	65.748	190.138	127.325	−11.250	56.531	−182.374	−69.644	−49.051	2.847
	1000.00	63.450	196.944	133.955	−4.792	62.989	−201.736	−67.915	−46.858	2.448
	1100.00	61.426	202.894	139.957	1.450	69.231	−221.734	−66.476	−44.824	2.129
	1200.00	59.676	208.162	145.426	7.502	75.283	−242.292	−65.319	−42.909	1.868
	1300.00	58.199	212.879	150.436	13.394	81.175	−263.348	−64.458	−41.078	1.651
	1400.00	56.991	217.146	155.051	19.151	86.932	−284.853	−77.026	−38.896	1.451
	1500.00	56.057	221.044	159.323	24.801	92.582	−306.765	−76.571	−36.189	1.260
	1600.00	55.401	224.640	163.294	30.372	98.153	−329.052	−76.198	−33.510	1.094

References

Phase	H / S	C_p
SOL−A	K2	Pa2
SOL−B	Pa2	Pa2
SOL−C	Pa2	Pa2
LIQ	Pa2	Pa2

190.450

COPPER MONOIODIDE (GAS) **CuI**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	36.425	255.702	255.702	−142.256	0.000	−218.493	−142.256	−191.292	33.514
	300.00	36.440	255.927	255.702	−142.189	0.067	−218.967	−142.284	−191.596	33.360
	400.00	36.978	266.494	257.139	−138.514	3.742	−245.112	−151.922	−207.515	27.099
	500.00	37.254	274.778	259.868	−134.801	7.455	−272.190	−174.868	−219.181	22.898
	600.00	37.427	281.586	262.937	−131.067	11.189	−300.018	−175.629	−227.972	19.847
	700.00	37.551	287.366	266.025	−127.317	14.939	−328.473	−176.435	−236.633	17.658
	800.00	37.650	292.386	269.013	−123.557	18.699	−357.466	−177.286	−245.175	16.008
	900.00	37.733	296.826	271.861	−119.788	22.468	−386.931	−178.183	−253.608	14.719
	1000.00	37.807	300.805	274.560	−116.011	26.245	−416.816	−179.134	−261.938	13.682
	1100.00	37.874	304.412	277.113	−112.227	30.029	−447.080	−180.153	−270.170	12.829
	1200.00	37.938	307.710	279.527	−108.436	33.820	−477.688	−181.258	−278.305	12.114
	1300.00	37.998	310.749	281.813	−104.639	37.617	−508.613	−182.492	−286.344	11.505
	1400.00	38.057	313.567	283.982	−100.837	41.419	−539.831	−197.014	−293.874	10.965
	1500.00	38.113	316.195	286.043	−97.028	45.228	−571.320	−198.400	−300.744	10.473
	1600.00	38.169	318.656	288.005	−93.214	49.042	−603.064	−199.784	−307.522	10.040
	1700.00	38.224	320.972	289.877	−89.394	52.862	−635.047	−201.164	−314.214	9.655
	1800.00	38.278	323.158	291.666	−85.569	56.687	−667.254	−202.543	−320.824	9.310
	1900.00	38.331	325.229	293.378	−81.739	60.517	−699.675	−203.919	−327.357	9.000
	2000.00	38.384	327.197	295.020	−77.903	64.353	−732.297	−205.292	−333.819	8.718

References

Phase	H / S	C_p
GAS	Pa2	Pa2

571.351

TRICOPPER TRIIODIDE (GAS) **Cu3I3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	129.104	464.533	464.533	−16.736	0.000	−155.237	−16.736	−73.631	12.900
	300.00	129.154	465.332	464.536	−16.497	0.239	−156.097	−16.784	−73.984	12.882
	400.00	130.894	502.762	469.627	−3.482	13.254	−204.587	−43.706	−91.795	11.987
	500.00	131.696	532.066	479.291	9.652	26.388	−256.381	−110.549	−97.352	10.170
	600.00	132.127	556.119	490.151	22.845	39.581	−310.826	−110.841	−94.688	8.243
	700.00	132.384	576.507	501.068	36.071	52.807	−367.484	−111.282	−91.963	6.862
	800.00	132.548	594.196	511.628	49.319	66.055	−426.038	−111.869	−89.165	5.822
	900.00	132.657	609.815	521.687	62.579	79.315	−486.254	−112.605	−86.284	5.008
	1000.00	132.733	623.796	531.211	75.849	92.585	−547.947	−113.521	−83.312	4.352
	1100.00	132.787	636.449	540.212	89.125	105.861	−610.969	−114.652	−80.239	3.810
	1200.00	132.826	648.005	548.720	102.406	119.142	−675.200	−116.059	−77.051	3.354
	1300.00	132.855	658.638	556.772	115.690	132.426	−740.539	−117.867	−73.730	2.963

References

Phase	H / S	C_p
GAS	K2	K2

CuMg2 — 1–COPPER 2–MAGNESIUM — 112.156

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	74.307	92.257	92.257	−28.619	0.000	−56.125	−28.619	−26.752	4.687
	300.00	74.354	92.717	92.259	−28.481	0.138	−56.297	−28.619	−26.741	4.656
	400.00	76.864	114.451	95.205	−20.921	7.698	−66.701	−28.653	−26.111	3.410
	500.00	79.375	131.873	100.852	−13.109	15.510	−79.045	−28.741	−25.467	2.660
	600.00	81.885	146.566	107.277	−5.046	23.573	−92.985	−28.871	−24.800	2.159
	700.00	84.395	159.377	113.824	3.268	31.887	−108.296	−29.040	−24.109	1.799
	800.00	86.906	170.811	120.245	11.833	40.452	−124.815	−29.245	−23.391	1.527
	841.00	87.935	175.180	122.817	15.418	44.037	−131.908	−29.338	−23.089	1.434

References

Phase	H / S	C_p	Remarks
SOL	Tk1/Ku1	Tk1,e	Tk1 MPT= 841.

Cu2Mg — 2–COPPER 1–MAGNESIUM — 151.397

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	73.932	102.926	102.926	−33.514	0.000	−64.202	−33.514	−34.683	6.076
	300.00	73.974	103.384	102.928	−33.377	0.137	−64.392	−33.514	−34.690	6.040
	400.00	76.256	124.977	105.857	−25.866	7.648	−75.857	−33.539	−35.080	4.581
	500.00	78.538	142.239	111.463	−18.126	15.388	−89.245	−33.593	−35.460	3.704
	600.00	80.820	156.759	117.833	−10.158	23.356	−104.214	−33.651	−35.828	3.119
	700.00	83.102	169.389	124.315	−1.962	31.552	−120.534	−33.708	−36.186	2.700
	800.00	85.384	180.635	130.665	6.462	39.976	−138.046	−33.756	−36.536	2.386
	900.00	87.666	190.823	136.791	15.115	48.629	−156.626	−33.795	−36.882	2.141
	1000.00	89.948	200.178	142.669	23.995	57.509	−176.183	−42.789	−36.464	1.905
	1092.00	92.047	208.185	147.855	32.367	65.881	−194.971	−42.760	−35.883	1.716

References

Phase	H / S	C_p	Remarks
SOL	Tk1	e	Tk1 MPT= 1092.

223.484

COPPER MOLYBDATE **CuMoO4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	117.281	131.796	131.796	−911.694	0.000	−950.989	−911.694	−810.247	141.952
	300.00	117.575	132.522	131.798	−911.477	0.217	−951.233	−911.675	−809.617	140.967
	400.00	129.631	168.144	136.573	−899.066	12.628	−966.323	−910.153	−775.804	101.310
	500.00	137.863	197.996	145.953	−885.673	26.021	−984.671	−907.990	−742.457	77.564
	600.00	144.590	223.741	156.820	−871.542	40.152	−1005.786	−905.415	−709.587	61.775
	700.00	150.606	246.488	168.036	−856.778	54.916	−1029.319	−902.507	−677.174	50.531
	800.00	156.244	266.969	179.143	−841.433	70.261	−1055.009	−899.281	−645.200	42.127
	900.00	161.661	285.687	189.956	−825.536	86.158	−1082.654	−895.738	−613.649	35.615
	1000.00	166.942	302.994	200.405	−809.105	102.589	−1112.099	−891.879	−582.510	30.427
	1100.00	172.133	319.149	210.473	−792.151	119.543	−1143.215	−887.712	−551.772	26.201
	1123.00	173.317	322.723	212.736	−788.178	123.516	−1150.596	−886.711	−544.759	25.339

References

Phase	H / S	C_p	Remarks	
SOL	Tk1	e	Tk1	DPT= 1123. (LIQ + Cu3Mo2O9)

79.545

COPPER MONOXIDE **CuO**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	42.244	42.593	42.593	−156.063	0.000	−168.762	−156.063	−128.292	22.476
	300.00	42.363	42.855	42.594	−155.985	0.078	−168.841	−156.057	−128.120	22.308
	400.00	46.808	55.727	44.319	−151.500	4.563	−173.791	−155.551	−118.875	15.523
	500.00	49.264	66.457	47.704	−146.687	9.376	−179.915	−154.829	−109.786	11.469
	600.00	50.937	75.595	51.610	−141.672	14.391	−187.029	−154.014	−100.853	8.780
	700.00	52.241	83.548	55.617	−136.511	19.552	−194.995	−153.155	−92.061	6.870
	800.00	53.348	90.598	59.557	−131.231	24.832	−203.709	−152.268	−83.393	5.445
	900.00	54.340	96.939	63.364	−125.845	30.218	−213.091	−151.361	−74.838	4.343
	1000.00	55.260	102.713	67.014	−120.365	35.698	−223.077	−150.446	−66.385	3.468
	1100.00	56.135	108.021	70.504	−114.795	41.268	−233.618	−149.536	−58.023	2.755
	1200.00	56.978	112.941	73.838	−109.139	46.924	−244.669	−148.650	−49.743	2.165
	1300.00	57.798	117.535	77.025	−103.400	52.663	−256.195	−147.829	−41.535	1.669
	1397.00	58.578	121.722	79.984	−97.756	58.307	−267.801	−160.257	−33.252	1.243

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1	Ja1	NDPT= 1397. (Cu2O + O2)

CuO[g] COPPER MONOXIDE (GAS) 79.545

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	35.694	234.623	234.623	306.269	0.000	236.316	306.269	276.786	–48.492
	300.00	35.710	234.843	234.623	306.335	0.066	235.882	306.263	276.603	–48.161
	400.00	36.401	245.219	236.033	309.943	3.674	211.856	305.892	266.771	–34.837
	500.00	36.830	253.392	238.716	313.607	7.338	186.911	305.464	257.039	–26.853
	600.00	37.114	260.133	241.740	317.305	11.036	161.225	304.963	247.400	–21.538
	700.00	37.319	265.870	244.788	321.027	14.758	134.917	304.383	237.851	–17.749
	800.00	37.476	270.864	247.742	324.767	18.498	108.075	303.729	228.391	–14.912
	900.00	37.604	275.286	250.562	328.521	22.252	80.764	303.005	219.016	–12.711
	1000.00	37.713	279.254	253.236	332.287	26.018	53.033	302.206	209.726	–10.955
	1100.00	37.809	282.853	255.767	336.063	29.794	24.925	301.322	200.520	–9.522
	1200.00	37.896	286.146	258.164	339.849	33.580	–3.527	300.338	191.399	–8.331
	1300.00	37.976	289.183	260.434	343.642	37.373	–32.296	299.213	182.365	–7.328
	1400.00	38.051	292.000	262.590	347.444	41.175	–61.357	284.789	173.831	–6.486
	1500.00	38.123	294.628	264.639	351.252	44.983	–90.689	283.493	165.950	–5.779
	1600.00	38.191	297.090	266.591	355.068	48.799	–120.277	282.191	158.156	–5.163
	1700.00	38.258	299.408	268.454	358.890	52.621	–150.103	280.883	150.444	–4.623
	1800.00	38.323	301.596	270.235	362.719	56.450	–180.154	279.570	142.809	–4.144
	1900.00	38.386	303.670	271.941	366.555	60.286	–210.418	278.251	135.247	–3.718
	2000.00	38.448	305.641	273.577	370.397	64.128	–240.884	276.927	127.755	–3.337

References

Phase	H / S	C_p
GAS	Ja1	Ja1

143.091

DICOPPER OXIDE

Cu2O

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	62.544	92.341	92.341	−170.707	0.000	−198.238	−170.707	−147.880	25.908
	300.00	62.666	92.728	92.342	−170.591	0.116	−198.410	−170.709	−147.739	25.724
	400.00	67.668	111.505	94.868	−164.052	6.655	−208.654	−170.641	−140.084	18.293
	500.00	70.939	126.976	99.788	−157.113	13.594	−220.601	−170.356	−132.475	13.840
	600.00	73.475	140.141	105.443	−149.888	20.819	−233.973	−169.950	−124.935	10.877
	700.00	75.650	151.634	111.238	−142.430	28.277	−248.574	−169.468	−117.470	8.766
	800.00	77.626	161.866	116.939	−134.765	35.942	−264.258	−168.922	−110.078	7.187
	900.00	79.484	171.117	122.453	−126.909	43.798	−280.914	−168.319	−102.758	5.964
	1000.00	81.267	179.585	127.748	−118.871	51.836	−298.455	−167.681	−95.507	4.989
	1100.00	83.414	187.425	132.821	−110.643	60.064	−316.810	−167.018	−88.322	4.194
	1200.00	86.123	194.796	137.681	−102.169	68.538	−335.925	−166.310	−81.198	3.534
	1300.00	89.197	201.809	142.347	−93.406	77.301	−355.758	−165.592	−74.135	2.979
	1400.00	92.516	208.540	146.836	−84.322	86.385	−376.277	−191.151	−66.313	2.474
	1500.00	96.004	215.041	151.167	−74.897	95.810	−397.458	−190.116	−57.430	2.000
	1516.70	96.600	216.107	151.876	−73.289	97.418	−401.058	−189.910	−55.954	1.927
			42.703		64.768					
LIQ	1516.70	99.914	258.810	151.876	−8.521	162.186	−401.058	−125.142	−55.954	1.927
	1600.00	99.914	264.152	157.584	−0.198	170.509	−422.841	−123.819	−52.190	1.704
	1700.00	99.914	270.209	164.033	9.793	180.500	−449.563	−122.243	−47.761	1.468
	1800.00	99.914	275.920	170.092	19.785	190.492	−476.872	−120.678	−43.425	1.260
	1900.00	99.914	281.322	175.805	29.776	200.483	−504.736	−119.125	−39.176	1.077
	2000.00	99.914	286.447	181.210	39.768	210.475	−533.127	−117.584	−35.008	0.914

References

Phase	H / S	C_p
SOL	Ja1	Ja1
LIQ	Ja1	Ja1

CuFeO2 COPPER IRON DIOXIDE 151.392

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	79.996	88.868	88.868	−512.958	0.000	−539.454	−512.958	−460.268	80.637
	300.00	80.258	89.364	88.870	−512.810	0.148	−539.619	−512.956	−459.941	80.083
	400.00	89.757	113.934	92.155	−504.247	8.711	−549.820	−512.483	−442.326	57.762
	500.00	94.558	134.529	98.629	−495.008	17.950	−562.273	−511.717	−424.873	44.386
	600.00	97.510	152.048	106.109	−485.395	27.563	−576.624	−510.971	−407.576	35.483
	700.00	99.589	167.243	113.781	−475.535	37.423	−592.605	−510.369	−390.394	29.132
	800.00	101.203	180.651	121.318	−465.492	47.466	−610.013	−510.005	−373.283	24.373
	900.00	102.546	192.650	128.589	−455.303	57.655	−628.688	−510.029	−356.196	20.673
	1000.00	103.721	203.517	135.547	−444.989	67.969	−648.505	−510.787	−339.072	17.711
	1091.00	104.694	212.592	141.600	−435.505	77.453	−667.443	−512.264	−323.371	15.482
			0.346		0.377					
SOL−B	1091.00	107.937	212.938	141.600	−435.128	77.830	−667.443	−511.887	−323.371	15.482
	1100.00	108.073	213.825	142.187	−434.156	78.802	−669.364	−511.919	−321.816	15.282
	1200.00	109.579	223.293	148.556	−423.273	89.685	−691.226	−512.709	−304.518	13.255
	1300.00	111.085	232.124	154.649	−412.240	100.718	−714.001	−511.829	−287.205	11.540
	1400.00	112.591	240.411	160.482	−401.056	111.902	−737.632	−524.204	−269.549	10.057
	1470.00	113.646	245.930	164.420	−393.138	119.820	−754.655	−523.650	−256.830	9.126
			43.776		64.350					
LIQ	1470.00	126.708	289.706	164.420	−328.788	184.170	−754.655	−459.300	−256.830	9.126
	1500.00	126.708	292.266	166.951	−324.987	187.971	−763.385	−458.671	−252.704	8.800
	1600.00	126.708	300.443	175.042	−312.316	200.642	−793.025	−456.646	−239.039	7.804

References

Phase	H / S	C_p
SOL−A	K2	K2
SOL−B	K2	K2
LIQ	K2	K2

239.238

COPPER DIIRON TETRAOXIDE **CuFe2O4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol		]	[−]
SOL−A	298.15	148.378	146.758	146.758	−967.968	0.000	−1011.724	−967.968	−863.240	151.236
	300.00	148.920	147.678	146.761	−967.693	0.275	−1011.996	−967.939	−862.590	150.190
	400.00	172.088	193.927	152.910	−951.561	16.407	−1029.132	−965.495	−827.797	108.099
	500.00	189.138	234.224	165.229	−933.471	34.497	−1050.583	−961.788	−793.782	82.926
	600.00	203.779	270.026	179.766	−913.812	54.156	−1075.827	−957.245	−760.595	66.216
	675.00	213.979	294.621	191.177	−898.143	69.825	−1097.012	−953.388	−736.242	56.974
			1.116		0.753					
SOL−B	675.00	227.191	295.737	191.177	−897.390	70.578	−1097.012	−952.635	−736.242	56.974
	700.00	227.191	303.999	195.059	−891.710	76.258	−1104.510	−950.985	−728.257	54.343
	795.00	227.191	332.912	209.842	−870.127	97.841	−1134.792	−945.180	−698.416	45.889
			0.000		0.000					
SOL−C	795.00	198.619	332.912	209.842	−870.127	97.841	−1134.792	−945.180	−698.416	45.889
	800.00	198.824	334.158	210.615	−869.133	98.835	−1136.460	−945.040	−696.865	45.501
	900.00	202.924	357.813	225.677	−849.046	118.922	−1171.077	−942.603	−665.997	38.653
	1000.00	207.024	379.405	239.986	−828.548	139.420	−1207.954	−941.416	−635.343	33.187
	1100.00	211.125	399.329	253.577	−807.641	160.327	−1246.903	−941.531	−604.701	28.715
	1200.00	215.225	417.875	266.505	−786.324	181.644	−1287.774	−940.565	−574.159	24.992
	1300.00	219.325	435.264	278.824	−764.596	203.372	−1330.439	−936.016	−543.809	21.851
	1358.00	221.703	444.889	285.712	−751.806	216.162	−1355.965	−933.383	−526.369	20.246
			9.613		13.054					
LIQ	1358.00	225.936	454.502	285.712	−738.752	229.216	−1355.965	−920.329	−526.369	20.246
	1400.00	225.936	461.383	290.880	−729.263	238.705	−1375.200	−931.383	−513.810	19.170
	1500.00	225.936	476.971	302.772	−706.669	261.299	−1422.126	−926.577	−484.152	16.860

References

Phase	H / S	C_p
SOL−A	K2	K2
SOL−B	K2	K2
SOL−C	K2	K2
LIQ	K2	K2

97.561

COPPER HYDROXIDE **Cu(OH)2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol		]	[−]
SOL	298.15	87.850	87.027	87.027	−443.086	0.000	−469.033	−443.086	−359.018	62.899
	300.00	87.967	87.571	87.029	−442.923	0.163	−469.195	−443.076	−358.497	62.420
	400.00	92.917	113.610	90.546	−433.860	9.226	−479.304	−442.383	−330.400	43.146
	500.00	96.458	134.739	97.337	−424.385	18.701	−491.754	−441.452	−302.508	31.603
	600.00	99.444	152.595	105.096	−414.587	28.499	−506.144	−440.362	−274.819	23.925
	700.00	102.168	168.131	113.015	−404.505	38.581	−522.196	−439.146	−247.323	18.455

References

Phase	H / S	C_p
SOL	K2	K2

Cu2OSO4 — DICOPPER OXIDE SULFATE — 239.155

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	140.210	157.318	157.318	−927.593	0.000	−974.497	−927.593	−792.253	138.799
	300.00	140.837	158.188	157.321	−927.333	0.260	−974.789	−927.602	−791.413	137.797
	400.00	164.456	202.332	163.180	−911.932	15.661	−992.865	−929.196	−745.971	97.414
	500.00	177.825	240.575	174.927	−894.769	32.824	−1015.056	−928.706	−700.225	73.152
	600.00	187.160	273.861	188.703	−876.498	51.095	−1040.815	−927.149	−654.657	56.993
	700.00	194.590	303.287	203.010	−857.399	70.194	−1069.700	−924.846	−609.417	45.475
	800.00	201.005	329.698	217.223	−837.613	89.980	−1101.372	−922.212	−564.533	36.860
	900.00	206.829	353.714	231.075	−817.218	110.375	−1135.560	−972.088	−518.842	30.113
	1000.00	212.287	375.790	244.457	−796.260	131.333	−1172.050	−967.289	−468.736	24.484
	1100.00	217.505	396.270	257.338	−774.768	152.825	−1210.665	−962.223	−419.124	19.903
	1138.00	219.443	403.689	262.102	−766.466	161.127	−1225.865	−960.235	−400.396	18.378

References

Phase	H / S	C_p	Remarks
SOL	Ja1	Ja1	Ja1 NDPT= 1138.4 (CuO + SO3 + SO2 + O2)

CuP2 — COPPER DIPHOSPHIDE — 125.494

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	71.083	81.588	81.588	−121.001	0.000	−145.326	−121.001	−110.949	19.438
	300.00	71.124	82.028	81.589	−120.869	0.132	−145.478	−121.003	−110.886	19.307
	400.00	73.354	102.794	84.406	−113.646	7.355	−154.763	−122.775	−107.110	13.987
	500.00	75.584	119.402	89.798	−106.199	14.802	−165.900	−123.155	−103.146	10.776
	600.00	77.814	133.380	95.926	−98.529	22.472	−178.557	−123.370	−99.122	8.629
	700.00	80.044	145.543	102.164	−90.636	30.365	−192.516	−123.417	−95.074	7.095
	800.00	82.274	156.377	108.275	−82.520	38.481	−207.621	−123.291	−91.032	5.944
	900.00	84.504	166.196	114.174	−74.181	46.820	−223.757	−122.993	−87.015	5.050
	1000.00	86.734	175.215	119.833	−65.619	55.382	−240.834	−122.531	−83.041	4.338
	1100.00	88.964	183.586	125.252	−56.834	64.167	−258.779	−121.916	−79.121	3.757

References

Phase	H / S	C_p
SOL	Nb1/Ku1	e

221.612

TRICOPPER PHOSPHIDE

Cu3P

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	87.802	119.244	119.244	−151.461	0.000	−187.014	−151.461	−145.105	25.422
	300.00	87.864	119.787	119.246	−151.299	0.162	−187.235	−151.478	−145.066	25.258
	400.00	91.211	145.523	122.732	−142.345	9.116	−200.554	−153.255	−142.591	18.621
	500.00	94.558	166.235	129.426	−133.056	18.405	−216.174	−154.286	−139.803	14.605
	600.00	97.906	183.771	137.058	−123.433	28.028	−233.696	−155.153	−136.822	11.911
	700.00	101.253	199.115	144.849	−113.475	37.986	−252.856	−155.852	−133.709	9.978
	800.00	104.600	212.854	152.506	−103.183	48.278	−273.466	−156.367	−130.509	8.521
	900.00	107.947	225.367	159.916	−92.555	58.906	−295.386	−156.699	−127.255	7.386
	1000.00	111.294	236.914	167.046	−81.593	69.868	−318.507	−156.873	−123.972	6.476
	1100.00	114.642	247.678	173.892	−70.296	81.165	−342.742	−156.924	−120.679	5.731
	1200.00	117.989	257.797	180.467	−58.665	92.796	−368.021	−220.483	−116.295	5.062
	1300.00	121.336	267.373	186.787	−46.699	104.762	−394.284	−219.755	−107.643	4.325

References

Phase	H / S	C_p	Remarks
SOL	Nb1/Ku1	e	Tk1 MPT= 1295.

95.612

COPPER SULFIDE

CuS

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	47.824	66.484	66.484	−53.095	0.000	−72.917	−53.095	−53.472	9.368
	300.00	47.844	66.780	66.485	−53.007	0.088	−73.040	−53.094	−53.474	9.311
	400.00	48.949	80.695	68.375	−48.167	4.928	−80.445	−55.328	−53.513	6.988
	500.00	50.053	91.736	71.980	−43.217	9.878	−89.085	−56.843	−52.906	5.527
	600.00	51.158	100.959	76.062	−38.156	14.939	−98.732	−57.978	−52.003	4.527
	700.00	52.262	108.928	80.200	−32.985	20.110	−109.235	−58.791	−50.941	3.801
	800.00	53.367	115.979	84.240	−27.704	25.391	−120.487	−59.594	−49.766	3.249
	900.00	54.471	122.329	88.125	−22.312	30.783	−132.408	−113.184	−47.336	2.747
	1000.00	55.576	128.125	91.839	−16.809	36.286	−144.934	−112.352	−40.063	2.093
	1100.00	56.681	133.474	95.384	−11.197	41.898	−158.018	−111.486	−32.876	1.561
	1200.00	57.785	138.453	98.768	−5.473	47.622	−171.617	−110.607	−25.769	1.122
	1300.00	58.890	143.122	102.002	0.360	53.455	−185.698	−109.754	−18.734	0.753

References

Phase	H / S	C_p
SOL	Nb1	Ku1,e

CuS[g] COPPER SULFIDE (GAS) 95.612

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	35.119	252.614	252.614	320.494	0.000	245.177	320.494	264.623	−46.361
	300.00	35.146	252.831	252.614	320.559	0.065	244.710	320.472	264.276	−46.015
	400.00	36.094	263.091	254.007	324.128	3.634	218.891	316.966	245.823	−32.101
	500.00	36.536	271.198	256.663	327.762	7.268	192.163	314.136	228.341	−23.855
	600.00	36.780	277.883	259.659	331.428	10.934	164.699	311.607	211.428	−18.406
	700.00	36.930	283.565	262.678	335.115	14.621	136.619	309.309	194.913	−14.545
	800.00	37.030	288.503	265.604	338.813	18.319	108.010	306.922	178.732	−11.670
	900.00	37.101	292.869	268.396	342.520	22.026	78.938	251.647	164.010	−9.519
	1000.00	37.154	296.781	271.042	346.233	25.739	49.452	250.690	154.323	−8.061
	1100.00	37.196	300.324	273.546	349.950	29.456	19.594	249.661	144.735	−6.873
	1200.00	37.229	303.562	275.914	353.671	33.177	−10.603	248.538	135.245	−5.887
	1300.00	37.256	306.543	278.157	357.396	36.902	−41.110	247.281	125.854	−5.057
	1400.00	37.280	309.305	280.284	361.123	40.629	−71.904	232.731	116.973	−4.364
	1500.00	37.300	311.878	282.306	364.852	44.358	−102.965	231.312	108.754	−3.787
	1600.00	37.318	314.285	284.230	368.582	48.088	−134.274	229.890	100.629	−3.285
	1700.00	37.334	316.548	286.065	372.315	51.821	−165.817	228.465	92.594	−2.845
	1800.00	37.349	318.683	287.819	376.049	55.555	−197.580	227.039	84.643	−2.456
	1900.00	37.363	320.702	289.497	379.785	59.291	−229.550	225.609	76.771	−2.111
	2000.00	37.376	322.619	291.105	383.522	63.028	−261.717	224.177	68.975	−1.801

References

Phase	H / S	C_p
GAS	Mi1	Mi1

159.158 DICOPPER SULFIDE **Cu2S**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	76.910	116.152	116.152	−81.170	0.000	−115.801	−81.170	−86.468	15.149
	300.00	77.090	116.628	116.153	−81.028	0.142	−116.016	−81.160	−86.500	15.061
	376.00	84.475	134.838	118.131	−74.888	6.282	−125.587	−80.988	−87.905	12.212
			9.625		3.619					
SOL−B	376.00	100.249	144.463	118.131	−71.269	9.901	−125.587	−80.988	−87.905	12.212
	400.00	99.203	150.634	119.898	−68.876	12.294	−129.129	−78.576	−88.543	11.563
	500.00	95.215	172.331	128.311	−59.160	22.010	−145.325	−77.886	−91.149	9.522
	600.00	91.755	189.378	137.120	−49.815	31.355	−163.442	−77.356	−93.850	8.170
	700.00	88.779	203.292	145.610	−40.792	40.378	−183.097	−76.992	−96.633	7.211
	720.00	88.241	205.786	147.247	−39.022	42.148	−187.188	−76.965	−97.194	7.051
			1.628		1.172					
SOL−C	720.00	82.969	207.414	147.247	−37.850	43.320	−187.188	−76.965	−97.194	7.051
	800.00	82.718	216.142	153.708	−31.223	49.947	−204.137	−76.233	−99.550	6.500
	900.00	82.398	225.867	161.197	−22.967	58.203	−226.247	−129.735	−101.271	5.878
	1000.00	82.090	234.532	168.105	−14.743	66.427	−249.275	−129.015	−98.148	5.127
	1100.00	81.795	242.342	174.504	−6.549	74.621	−273.125	−128.473	−95.089	4.515
	1200.00	81.504	249.447	180.458	1.616	82.786	−297.720	−128.147	−92.071	4.008
	1300.00	81.204	255.959	186.019	9.752	90.922	−322.994	−128.119	−89.068	3.579
	1400.00	80.877	261.965	191.232	17.856	99.026	−348.895	−154.711	−85.241	3.180
			9.175		12.845					
LIQ	1400.00	89.663	271.140	191.232	30.701	111.871	−348.895	−154.711	−85.241	3.180
	1500.00	89.663	277.326	196.768	39.668	120.838	−376.321	−141.332	−81.215	2.828
	1600.00	89.663	283.113	201.985	48.634	129.804	−404.346	−140.803	−77.224	2.521
	1700.00	89.663	288.549	206.919	57.600	138.770	−432.932	−140.278	−73.266	2.251
	1800.00	89.663	293.674	211.598	66.567	147.737	−462.046	−139.757	−69.340	2.012
	1900.00	89.663	298.521	216.046	75.533	156.703	−491.658	−139.240	−65.442	1.799
	2000.00	89.663	303.121	220.286	84.499	165.669	−521.742	−138.728	−61.571	1.608

References

Phase	H / S	C_p
SOL−A	Pa3	Pa3
SOL−B	Pa3	Pa3
SOL−C	Pa3	Pa3
LIQ	Pa3	Pa3

CuSO4 — COPPER SULFATE — 159.610

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	98.769	109.002	109.002	−771.358	0.000	−803.857	−771.358	−662.082	115.994
	300.00	99.143	109.614	109.003	−771.175	0.183	−804.059	−771.371	−661.404	115.161
	400.00	115.401	140.520	113.107	−760.393	10.965	−816.601	−773.606	−624.623	81.567
	500.00	127.012	167.579	121.353	−748.245	23.113	−832.034	−774.040	−587.332	61.358
	600.00	135.927	191.558	131.094	−735.079	36.279	−850.014	−773.389	−550.032	47.885
	700.00	142.813	213.052	141.294	−721.127	50.231	−870.263	−771.929	−512.914	38.274
	800.00	147.948	232.476	151.497	−706.575	64.783	−892.556	−770.137	−476.033	31.082
	900.00	151.467	250.120	161.491	−691.591	79.767	−916.699	−820.945	−438.234	25.434
	1000.00	153.439	266.195	171.170	−676.333	95.025	−942.528	−817.281	−395.906	20.680
	1078.00	153.930	277.743	178.468	−664.340	107.018	−963.747	−814.450	−363.147	17.596

References

Phase	H / S	C_p	Remarks
SOL	Co1,Nb1	Ja1	Ja1 NDPT= 1078.

Cu2SO4 — DICOPPER SULFATE — 223.156

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	120.287	182.422	182.422	−751.400	0.000	−805.789	−751.400	−654.127	114.600
	300.00	120.416	183.167	182.425	−751.177	0.223	−806.127	−751.419	−653.523	113.789
	400.00	127.361	218.759	187.231	−738.789	12.611	−826.292	−754.539	−620.660	81.050
	500.00	134.306	247.925	196.536	−725.705	25.695	−849.668	−756.600	−586.967	61.320
	600.00	141.252	273.026	207.238	−711.927	39.473	−875.743	−757.956	−552.899	48.134
	700.00	148.197	295.322	218.257	−697.455	53.945	−904.180	−758.652	−518.661	38.703
	800.00	155.143	315.564	229.174	−682.288	69.112	−934.739	−758.969	−484.351	31.625
	900.00	162.088	334.238	239.823	−666.426	84.974	−967.241	−811.676	−448.871	26.052
	1000.00	169.034	351.676	250.146	−649.870	101.530	−1001.546	−809.548	−408.669	21.347

References

Phase	H / S	C_p
SOL	Nb1	e

177.625

COPPER SULFATE MONOHYDRATE — CuSO4*H2O

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	133.991	145.997	145.997	−1085.832	0.000	−1129.361	−1085.832	−918.042	160.837
	300.00	134.380	146.827	145.999	−1085.584	0.248	−1129.632	−1085.860	−917.001	159.664
	400.00	150.518	187.882	151.487	−1071.274	14.558	−1146.427	−1088.959	−860.461	112.365
	500.00	161.795	222.733	162.339	−1055.635	30.197	−1167.002	−1090.354	−803.181	83.908
	600.00	171.159	253.078	174.987	−1038.977	46.855	−1190.824	−1090.719	−745.693	64.918

References

Phase	H / S	C_p
SOL−A	Nb1	K2

213.655

COPPER SULFATE TRIHYDRATE — CuSO4*3H2O

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	205.001	221.300	221.300	−1684.311	0.000	−1750.292	−1684.311	−1399.884	245.254
	300.00	205.389	222.569	221.304	−1683.931	0.380	−1750.702	−1684.369	−1398.118	243.434
	400.00	221.518	284.049	229.577	−1662.522	21.789	−1776.142	−1689.151	−1302.198	170.050
	500.00	232.840	334.747	245.688	−1639.781	44.530	−1807.155	−1692.348	−1205.099	125.896
	600.00	242.269	378.051	264.226	−1616.016	68.295	−1842.846	−1694.624	−1107.418	96.409

References

Phase	H / S	C_p
SOL−A	Nb1	K2

CuSO4*5H2O COPPER SULFATE PENTAHYDRATE 249.686

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	281.190	300.399	300.399	−2279.648	0.000	−2369.212	−2279.648	−1879.715	329.318
	300.00	281.578	302.139	300.404	−2279.127	0.521	−2369.769	−2279.726	−1877.233	326.855
	400.00	297.696	385.538	311.666	−2250.099	29.549	−2404.314	−2285.672	−1742.394	227.533
	500.00	308.963	453.229	333.419	−2219.743	59.905	−2446.357	−2290.159	−1606.066	167.785
	600.00	318.322	510.405	358.273	−2188.369	91.279	−2494.612	−2293.842	−1468.886	127.878

References

Phase	H / S	C_p
SOL	Nb1	K2

Cu2Sb 2−COPPER ANTIMONY 248.842

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−I	298.15	76.566	126.482	126.482	−12.134	0.000	−49.845	−12.134	−16.497	2.890
	300.00	76.617	126.956	126.484	−11.992	0.142	−50.079	−12.129	−16.524	2.877
	374.00	78.661	144.065	128.325	−6.247	5.887	−60.127	−11.949	−17.628	2.462
			5.930		2.218					
SOL-II	374.00	78.611	149.996	128.325	−4.029	8.105	−60.127	−9.731	−17.628	2.462
	400.00	79.329	155.303	129.907	−1.976	10.158	−64.097	−9.662	−18.179	2.374
	500.00	82.090	173.301	136.843	6.095	18.229	−80.555	−9.335	−20.344	2.125
	600.00	84.852	188.512	144.218	14.442	26.576	−98.665	−8.906	−22.585	1.966
	700.00	87.613	201.799	151.514	23.065	35.199	−118.194	−8.390	−24.904	1.858
	800.00	90.374	213.679	158.555	31.965	44.099	−138.978	−7.810	−27.302	1.783

References

Phase	H / S	C_p
SOL−I	Tk1/Ku1	Ku1,e
SOL−II	Tk1	e

142.506

COPPER SELENIDE **CuSe**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol	]		[−]
SOL−B	298.15	81.424	78.241	78.241	−41.840	0.000	−65.167	−41.840	−42.680	7.477
	300.00	81.563	78.745	78.242	−41.689	0.151	−65.313	−41.781	−42.686	7.432
	326.40	83.543	85.706	78.567	−39.510	2.330	−67.484	−40.932	−42.801	6.850
			4.231		1.381					
SOL−O	326.40	83.595	89.937	78.567	−38.129	3.711	−67.484	−39.551	−42.801	6.850
	400.00	83.442	106.921	82.275	−31.982	9.858	−74.750	−37.235	−43.781	5.717
	500.00	83.232	125.518	89.134	−23.648	18.192	−86.407	−40.274	−45.672	4.771
	600.00	83.023	140.674	96.500	−15.335	26.505	−99.740	−38.095	−46.957	4.088
	700.00	82.814	153.456	103.747	−7.044	34.796	−114.463	−35.992	−48.601	3.627
	800.00	82.605	164.501	110.667	1.227	43.067	−130.373	−33.961	−50.542	3.300
	900.00	82.396	174.218	117.199	9.477	51.317	−147.319	−32.001	−52.733	3.061
	1000.00	82.186	182.889	123.342	17.706	59.546	−165.182	−30.121	−55.139	2.880
	1100.00	81.977	190.712	129.117	25.915	67.755	−183.869	−81.644	−52.774	2.506
	1200.00	81.768	197.836	134.551	34.102	75.942	−203.302	−78.520	−50.288	2.189
	1300.00	81.559	204.373	139.674	42.268	84.108	−223.417	−75.536	−48.057	1.931

References

Phase	H / S	C_p
SOL−B	Mi1	e
SOL−O	Mi1	e

206.052

DICOPPER SELENIDE **Cu2Se**[B]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol	]		[−]
SOL−B	298.15	81.424	129.704	129.704	−65.270	0.000	−103.941	−65.270	−71.566	12.538
	300.00	81.563	130.208	129.706	−65.119	0.151	−104.182	−65.257	−71.605	12.468
	395.40	88.720	153.672	132.748	−56.997	8.273	−117.758	−64.427	−73.736	9.741
			17.248		6.820					
SOL−A	395.40	83.451	170.920	132.748	−50.177	15.093	−117.758	−57.607	−73.736	9.741
	400.00	83.442	171.885	133.192	−49.793	15.477	−118.547	−57.584	−73.924	9.653
	500.00	83.232	190.482	142.860	−41.459	23.811	−136.700	−63.185	−77.967	8.145
	600.00	83.023	205.639	152.099	−33.146	32.124	−156.530	−63.626	−80.884	7.042
	700.00	82.814	218.421	160.685	−24.855	40.415	−177.749	−64.197	−83.717	6.247
	800.00	82.605	229.466	168.608	−16.584	48.686	−200.156	−64.892	−86.460	5.645
	900.00	82.396	239.183	175.920	−8.334	56.936	−223.598	−65.707	−89.108	5.172
	1000.00	82.186	247.853	182.688	−0.105	65.165	−247.958	−66.662	−91.659	4.788

References

Phase	H / S	C_p	Remarks	
SOL−B	Mi1	Mi1		
SOL−A	Mi1	Mi1	Mi1	MPT= 1390.

CuSeO3 — COPPER SELENITE — 190.504

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	97.834	103.345	103.345	−431.454	0.000	−462.266	−431.454	−348.032	60.974
	300.00	97.947	103.950	103.347	−431.273	0.181	−462.458	−431.447	−347.515	60.508
	400.00	104.098	132.970	107.262	−421.171	10.283	−474.359	−430.962	−319.606	41.736
	500.00	110.248	156.860	114.859	−410.453	21.001	−488.883	−436.205	−291.755	30.479
	600.00	116.399	177.504	123.616	−399.121	32.333	−505.623	−435.746	−262.901	22.888
	700.00	122.549	195.909	132.651	−387.174	44.280	−524.310	−434.870	−234.157	17.473
	800.00	128.700	212.675	141.621	−374.611	56.843	−544.751	−433.553	−205.568	13.422

References

Phase	H / S	C_p
SOL	Nb1,e	e

CuTe — COPPER TELLURIDE — 191.146

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	54.444	86.609	86.609	−25.104	0.000	−50.926	−25.104	−26.281	4.604
	300.00	54.506	86.946	86.610	−25.003	0.101	−51.087	−25.096	−26.288	4.577
	400.00	58.082	103.106	88.789	−19.377	5.727	−60.620	−24.648	−26.752	3.493
	500.00	61.906	116.475	93.025	−13.379	11.725	−71.616	−24.118	−27.337	2.856
	600.00	65.827	128.107	97.922	−6.993	18.111	−83.857	−23.479	−28.039	2.441
	613.00	66.341	129.524	98.577	−6.134	18.970	−85.532	−23.387	−28.139	2.398

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	Mi1	Mi1	NDPT= 613.

254.692

DICOPPER TELLURIDE

Cu2Te

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL−A	298.15	75.799	134.725	134.725	−41.840	0.000	−82.008	−41.840	−47.475	8.317
	300.00	75.898	135.194	134.726	−41.700	0.140	−82.258	−41.838	−47.510	8.272
	400.00	81.253	157.762	137.767	−33.842	7.998	−96.947	−41.651	−49.425	6.454
	433.00	83.021	164.272	139.541	−31.132	10.708	−102.261	−41.553	−50.070	6.040
			0.513		0.222					
SOL−B	433.00	83.648	164.785	139.541	−30.910	10.930	−102.261	−41.331	−50.070	6.040
	500.00	87.236	177.071	143.761	−25.185	16.655	−113.721	−41.025	−51.444	5.374
	531.00	88.897	182.368	145.862	−22.455	19.385	−119.293	−40.853	−52.095	5.125
			3.586		1.904					
SOL−C	531.00	112.968	185.954	145.862	−20.551	21.289	−119.293	−38.949	−52.095	5.125
	590.00	112.968	197.856	150.476	−13.886	27.954	−130.621	−37.240	−53.648	4.750
			1.631		0.962					
SOL−D	590.00	133.888	199.487	150.476	−12.924	28.916	−130.621	−36.278	−53.648	4.750
	600.00	133.888	201.737	151.312	−11.585	30.255	−132.627	−35.791	−53.946	4.696
	633.00	133.888	208.906	154.129	−7.167	34.673	−139.404	−34.207	−54.988	4.538
			3.867		2.448					
SOL−E	633.00	98.427	212.773	154.129	−4.719	37.121	−139.404	−31.759	−54.988	4.538
	700.00	97.278	222.619	160.222	1.838	43.678	−153.996	−31.065	−57.484	4.290
	800.00	95.563	235.497	168.847	11.480	53.320	−176.918	−48.065	−59.427	3.880
	841.00	94.859	240.255	172.214	15.383	57.223	−186.672	−47.968	−60.011	3.727
			2.373		1.996					
SOL−Z	841.00	87.446	242.629	172.214	17.379	59.219	−186.672	−45.972	−60.011	3.727
	900.00	87.446	248.558	177.026	22.538	64.378	−201.164	−46.322	−60.985	3.539
	1000.00	87.446	257.771	184.648	31.283	73.123	−226.488	−47.012	−62.578	3.269
	1100.00	87.446	266.106	191.680	40.028	81.868	−252.689	−47.844	−64.096	3.044
	1128.00	87.446	268.304	193.555	42.476	84.316	−260.170	−48.106	−64.506	2.987

References

Phase	H / S	C_p	Remarks	
SOL−A	Mi1	K8		
SOL−B	K8	K8		
SOL−C	K8	K8		
SOL−D	K8	K8		
SOL−E	K8	K8		
SOL−Z	K8	K8	Tk1	MPT= 1128.

D[g] DEUTERIUM (GAS) 2.014

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	20.786	123.350	123.350	221.720	0.000	184.943	221.720	206.553	–36.187
	300.00	20.786	123.479	123.350	221.758	0.038	184.715	221.731	206.459	–35.948
	400.00	20.786	129.458	124.166	223.837	2.117	172.054	222.349	201.275	–26.284
	500.00	20.786	134.097	125.705	225.916	4.196	158.867	222.963	195.935	–20.469
	600.00	20.786	137.886	127.429	227.994	6.274	145.262	223.568	190.473	–16.582
	700.00	20.786	141.091	129.158	230.073	8.353	131.309	224.156	184.910	–13.798
	800.00	20.786	143.866	130.827	232.151	10.431	117.059	224.722	179.264	–11.705
	900.00	20.786	146.314	132.414	234.230	12.510	102.547	225.262	173.549	–10.073
	1000.00	20.786	148.504	133.916	236.309	14.589	87.804	225.773	167.776	–8.764
	1100.00	20.786	150.485	135.333	238.387	16.667	72.853	226.256	161.953	–7.690
	1200.00	20.786	152.294	136.673	240.466	18.746	57.713	226.710	156.087	–6.794
	1300.00	20.786	153.958	137.939	242.544	20.824	42.399	227.137	150.184	–6.034
	1400.00	20.786	155.498	139.139	244.623	22.903	26.925	227.540	144.249	–5.382
	1500.00	20.786	156.932	140.278	246.702	24.982	11.303	227.919	138.286	–4.816
	1600.00	20.786	158.274	141.361	248.780	27.060	–4.458	228.276	132.299	–4.319
	1700.00	20.786	159.534	142.393	250.859	29.139	–20.349	228.614	126.290	–3.880
	1800.00	20.786	160.722	143.379	252.937	31.217	–36.362	228.933	120.262	–3.490
	1900.00	20.786	161.846	144.322	255.016	33.296	–52.491	229.236	114.216	–3.140
	2000.00	20.786	162.912	145.225	257.095	35.375	–68.730	229.523	108.155	–2.825
	2100.00	20.786	163.926	146.091	259.173	37.453	–85.072	229.796	102.080	–2.539
	2200.00	20.786	164.893	146.924	261.252	39.532	–101.513	230.056	95.992	–2.279
	2300.00	20.786	165.817	147.726	263.330	41.610	–118.049	230.302	89.893	–2.042
	2400.00	20.786	166.702	148.498	265.409	43.689	–134.675	230.538	83.783	–1.823
	2500.00	20.786	167.550	149.243	267.488	45.768	–151.388	230.762	77.663	–1.623
	2600.00	20.786	168.366	149.963	269.566	47.846	–168.184	230.975	71.535	–1.437
	2700.00	20.786	169.150	150.659	271.645	49.925	–185.060	231.178	65.399	–1.265
	2800.00	20.786	169.906	151.333	273.723	52.003	–202.013	231.372	59.255	–1.105
	2900.00	20.786	170.635	151.986	275.802	54.082	–219.041	231.556	53.105	–0.957
	3000.00	20.786	171.340	152.620	277.881	56.161	–236.140	231.731	46.949	–0.817
	3100.00	20.786	172.022	153.235	279.959	58.239	–253.308	231.898	40.786	–0.687
	3200.00	20.786	172.682	153.832	282.038	60.318	–270.543	232.056	34.619	–0.565
	3300.00	20.786	173.321	154.413	284.116	62.396	–287.844	232.205	28.447	–0.450
	3400.00	20.786	173.942	154.979	286.195	64.475	–305.207	232.346	22.270	–0.342
	3500.00	20.786	174.544	155.529	288.274	66.554	–322.631	232.479	16.089	–0.240
	3600.00	20.786	175.130	156.065	290.352	68.632	–340.115	232.604	9.905	–0.144
	3700.00	20.786	175.699	156.588	292.431	70.711	–357.657	232.721	3.717	–0.052
	3800.00	20.786	176.254	157.099	294.509	72.789	–375.255	232.830	–2.473	0.034
	3900.00	20.786	176.794	157.597	296.588	74.868	–392.907	232.932	–8.667	0.116
	4000.00	20.786	177.320	158.083	298.667	76.947	–410.613	233.025	–14.863	0.194
	4100.00	20.786	177.833	158.559	300.745	79.025	–428.371	233.110	–21.061	0.268
	4200.00	20.786	178.334	159.024	302.824	81.104	–446.179	233.188	–27.261	0.339
	4300.00	20.786	178.823	159.478	304.902	83.182	–464.037	233.258	–33.463	0.407
	4400.00	20.786	179.301	159.923	306.981	85.261	–481.943	233.320	–39.667	0.471
	4500.00	20.786	179.768	160.359	309.060	87.340	–499.897	233.375	–45.872	0.532
	4600.00	20.786	180.225	160.786	311.138	89.418	–517.897	233.422	–52.078	0.591
	4700.00	20.786	180.672	161.205	313.217	91.497	–535.941	233.462	–58.285	0.648
	4800.00	20.786	181.110	161.615	315.295	93.575	–554.031	233.495	–64.493	0.702
	4900.00	20.786	181.538	162.017	317.374	95.654	–572.163	233.520	–70.701	0.754
	5000.00	20.786	181.958	162.412	319.453	97.733	–590.338	233.539	–76.910	0.803

References

Phase	H / S	C_p
GAS	Ja2	Ja2

4.028

DEUTERIUM (GAS)

D2[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	29.194	144.960	144.960	0.000	0.000	−43.220	0.000	0.000	0.000
	300.00	29.195	145.141	144.961	0.054	0.054	−43.488	0.000	0.000	0.000
	400.00	29.242	153.545	146.106	2.976	2.976	−58.442	0.000	0.000	0.000
	500.00	29.366	160.081	148.271	5.905	5.905	−74.136	0.000	0.000	0.000
	600.00	29.621	165.456	150.701	8.853	8.853	−90.420	0.000	0.000	0.000
	700.00	30.007	170.049	153.144	11.833	11.833	−107.201	0.000	0.000	0.000
	800.00	30.500	174.087	155.515	14.858	14.858	−124.412	0.000	0.000	0.000
	900.00	31.059	177.712	157.783	17.936	17.936	−142.005	0.000	0.000	0.000
	1000.00	31.635	181.014	159.943	21.071	21.071	−159.943	0.000	0.000	0.000
	1100.00	32.209	184.056	161.999	24.263	24.263	−178.199	0.000	0.000	0.000
	1200.00	32.762	186.883	163.956	27.512	27.512	−196.747	0.000	0.000	0.000
	1300.00	33.283	189.526	165.822	30.814	30.814	−215.569	0.000	0.000	0.000
	1400.00	33.766	192.010	167.605	34.167	34.167	−234.647	0.000	0.000	0.000
	1500.00	34.213	194.355	169.311	37.566	37.566	−253.967	0.000	0.000	0.000
	1600.00	34.624	196.577	170.946	41.008	41.008	−273.514	0.000	0.000	0.000
	1700.00	35.004	198.687	172.517	44.490	44.490	−293.278	0.000	0.000	0.000
	1800.00	35.353	200.698	174.027	48.008	48.008	−313.248	0.000	0.000	0.000
	1900.00	35.676	202.618	175.481	51.560	51.560	−333.415	0.000	0.000	0.000
	2000.00	35.975	204.456	176.885	55.143	55.143	−353.769	0.000	0.000	0.000
	2100.00	36.253	206.218	178.240	58.754	58.754	−374.303	0.000	0.000	0.000
	2200.00	36.512	207.910	179.550	62.392	62.392	−395.010	0.000	0.000	0.000
	2300.00	36.755	209.539	180.819	66.056	66.056	−415.883	0.000	0.000	0.000
	2400.00	36.984	211.108	182.048	69.743	69.743	−436.916	0.000	0.000	0.000
	2500.00	37.201	212.622	183.241	73.452	73.452	−458.103	0.000	0.000	0.000
	2600.00	37.407	214.085	184.400	77.183	77.183	−479.439	0.000	0.000	0.000
	2700.00	37.605	215.501	185.525	80.933	80.933	−500.919	0.000	0.000	0.000
	2800.00	37.795	216.872	186.621	84.703	84.703	−522.538	0.000	0.000	0.000
	2900.00	37.978	218.201	187.687	88.492	88.492	−544.292	0.000	0.000	0.000
	3000.00	38.156	219.492	188.726	92.299	92.299	−566.177	0.000	0.000	0.000
	3100.00	38.329	220.746	189.738	96.123	96.123	−588.189	0.000	0.000	0.000
	3200.00	38.498	221.965	190.726	99.965	99.965	−610.325	0.000	0.000	0.000
	3300.00	38.665	223.153	191.691	103.823	103.823	−632.581	0.000	0.000	0.000
	3400.00	38.829	224.309	192.634	107.697	107.697	−654.954	0.000	0.000	0.000
	3500.00	38.991	225.437	193.555	111.589	111.589	−677.442	0.000	0.000	0.000
	3600.00	39.152	226.538	194.456	115.496	115.496	−700.041	0.000	0.000	0.000
	3700.00	39.311	227.613	195.337	119.419	119.419	−722.748	0.000	0.000	0.000
	3800.00	39.470	228.663	196.201	123.358	123.358	−745.562	0.000	0.000	0.000
	3900.00	39.628	229.691	197.046	127.313	127.313	−768.480	0.000	0.000	0.000
	4000.00	39.785	230.696	197.875	131.283	131.283	−791.500	0.000	0.000	0.000
	4100.00	39.941	231.680	198.687	135.270	135.270	−814.619	0.000	0.000	0.000
	4200.00	40.096	232.644	199.485	139.272	139.272	−837.835	0.000	0.000	0.000
	4300.00	40.250	233.590	200.267	143.289	143.289	−861.147	0.000	0.000	0.000
	4400.00	40.402	234.517	201.035	147.322	147.322	−884.552	0.000	0.000	0.000
	4500.00	40.553	235.426	201.789	151.369	151.369	−908.050	0.000	0.000	0.000
	4600.00	40.701	236.319	202.530	155.432	155.432	−931.637	0.000	0.000	0.000
	4700.00	40.846	237.196	203.258	159.510	159.510	−955.313	0.000	0.000	0.000
	4800.00	40.989	238.058	203.974	163.601	163.601	−979.076	0.000	0.000	0.000
	4900.00	41.127	238.904	204.678	167.707	167.707	−1002.924	0.000	0.000	0.000
	5000.00	41.262	239.737	205.371	171.827	171.827	−1026.856	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Ja2	Ja2

DCl[g] HYDROGEN CHLORIDE–D1 (GAS) 37.467

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	29.169	192.741	192.741	–93.345	0.000	–150.811	–93.345	–95.940	16.808
	300.00	29.172	192.921	192.742	–93.291	0.054	–151.167	–93.349	–95.956	16.707
	400.00	29.403	201.340	193.888	–90.364	2.981	–170.900	–93.617	–96.786	12.639
	500.00	29.913	207.951	196.062	–87.400	5.945	–191.376	–93.903	–97.544	10.190
	600.00	30.613	213.465	198.515	–84.375	8.970	–212.454	–94.170	–98.247	8.553
	700.00	31.380	218.241	201.000	–81.276	12.069	–234.045	–94.399	–98.908	7.381
	800.00	32.140	222.482	203.425	–78.099	15.246	–256.085	–94.588	–99.539	6.499
	900.00	32.846	226.309	205.758	–74.849	18.496	–278.527	–94.739	–100.148	5.812
	1000.00	33.466	229.802	207.990	–71.533	21.812	–301.335	–94.861	–100.742	5.262
	1100.00	34.013	233.018	210.121	–68.158	25.187	–324.478	–94.959	–101.326	4.812
	1200.00	34.490	235.999	212.155	–64.733	28.612	–347.931	–95.040	–101.901	4.436
	1300.00	34.905	238.776	214.097	–61.263	32.082	–371.671	–95.107	–102.470	4.117
	1400.00	35.266	241.376	215.954	–57.753	35.592	–395.680	–95.165	–103.034	3.844
	1500.00	35.581	243.820	217.731	–54.211	39.134	–419.941	–95.217	–103.594	3.607
	1600.00	35.858	246.126	219.434	–50.639	42.706	–444.440	–95.263	–104.151	3.400
	1700.00	36.102	248.307	221.069	–47.040	46.305	–469.162	–95.308	–104.705	3.217
	1800.00	36.318	250.377	222.640	–43.419	49.926	–494.098	–95.351	–105.257	3.054
	1900.00	36.512	252.346	224.152	–39.777	53.568	–519.235	–95.394	–105.806	2.909
	2000.00	36.686	254.223	225.609	–36.117	57.228	–544.564	–95.437	–106.353	2.778
	2100.00	36.844	256.017	227.015	–32.441	60.904	–570.076	–95.483	–106.897	2.659
	2200.00	36.988	257.734	228.373	–28.749	64.596	–595.765	–95.530	–107.440	2.551
	2300.00	37.120	259.382	229.685	–25.043	68.302	–621.621	–95.581	–107.980	2.452
	2400.00	37.242	260.964	230.956	–21.325	72.020	–647.639	–95.634	–108.518	2.362
	2500.00	37.355	262.487	232.187	–17.595	75.750	–673.812	–95.692	–109.054	2.279
	2600.00	37.460	263.954	233.380	–13.855	79.490	–700.134	–95.753	–109.587	2.202
	2700.00	37.558	265.369	234.539	–10.104	83.241	–726.601	–95.820	–110.118	2.130
	2800.00	37.650	266.737	235.665	–6.343	87.002	–753.206	–95.891	–110.646	2.064
	2900.00	37.737	268.060	236.759	–2.574	90.771	–779.947	–95.968	–111.172	2.002
	3000.00	37.819	269.340	237.824	1.204	94.549	–806.817	–96.051	–111.694	1.945
	3100.00	37.897	270.582	238.861	4.990	98.335	–833.813	–96.139	–112.214	1.891
	3200.00	37.972	271.786	239.871	8.783	102.128	–860.932	–96.235	–112.731	1.840
	3300.00	38.043	272.956	240.856	12.584	105.929	–888.169	–96.337	–113.245	1.793
	3400.00	38.112	274.092	241.817	16.392	109.737	–915.522	–96.447	–113.756	1.748
	3500.00	38.178	275.198	242.755	20.206	113.551	–942.987	–96.564	–114.264	1.705
	3600.00	38.241	276.274	243.671	24.027	117.372	–970.561	–96.690	–114.768	1.665
	3700.00	38.303	277.323	244.566	27.854	121.199	–998.241	–96.824	–115.268	1.627
	3800.00	38.362	278.345	245.442	31.688	125.033	–1026.024	–96.966	–115.764	1.591
	3900.00	38.420	279.343	246.298	35.527	128.872	–1053.909	–97.118	–116.257	1.557
	4000.00	38.477	280.316	247.137	39.372	132.717	–1081.892	–97.279	–116.746	1.525
	4100.00	38.532	281.267	247.958	43.222	136.567	–1109.971	–97.450	–117.230	1.494
	4200.00	38.585	282.196	248.762	47.078	140.423	–1138.145	–97.631	–117.711	1.464
	4300.00	38.638	283.104	249.550	50.939	144.284	–1166.410	–97.823	–118.187	1.436
	4400.00	38.690	283.993	250.323	54.805	148.150	–1194.765	–98.025	–118.658	1.409
	4500.00	38.740	284.863	251.081	58.677	152.022	–1223.208	–98.238	–119.124	1.383
	4600.00	38.790	285.715	251.824	62.554	155.899	–1251.737	–98.462	–119.586	1.358
	4700.00	38.839	286.550	252.554	66.435	159.780	–1280.350	–98.697	–120.043	1.334
	4800.00	38.888	287.368	253.271	70.321	163.666	–1309.046	–98.943	–120.494	1.311
	4900.00	38.935	288.171	253.975	74.212	167.557	–1337.824	–99.201	–120.941	1.289
	5000.00	38.983	288.958	254.667	78.108	171.453	–1366.680	–99.470	–121.382	1.268

References

Phase	H / S	C_p
GAS	Ja2	Ja2

21.012 HYDROGEN FLUORIDE–D1 (GAS) **DF**[g]

Phase	T [K]	C_p [J / (K mol)]	S [J / (K mol)]	–(G–H298)/T [J / (K mol)]	H [kJ / mol]	H–H298 [kJ / mol]	G [kJ / mol]	ΔH_f [kJ / mol]	ΔG_f [kJ / mol]	log K_f [–]
GAS	298.15	29.137	179.702	179.702	–275.516	0.000	–329.094	–275.516	–277.253	48.573
	300.00	29.137	179.882	179.703	–275.462	0.054	–329.427	–275.518	–277.263	48.276
	400.00	29.174	188.269	180.846	–272.547	2.969	–347.854	–275.670	–277.824	36.280
	500.00	29.298	194.790	183.006	–269.624	5.892	–367.019	–275.894	–278.338	29.078
	600.00	29.563	200.152	185.430	–266.682	8.834	–386.774	–276.163	–278.802	24.272
	700.00	29.961	204.738	187.868	–263.707	11.809	–407.024	–276.453	–279.219	20.836
	800.00	30.461	208.770	190.234	–260.687	14.829	–427.703	–276.748	–279.594	18.256
	900.00	31.018	212.390	192.498	–257.613	17.903	–448.764	–277.037	–279.933	16.247
	1000.00	31.582	215.688	194.655	–254.483	21.033	–470.171	–277.314	–280.240	14.638
	1100.00	32.136	218.724	196.706	–251.297	24.219	–491.893	–277.577	–280.519	13.321
	1200.00	32.661	221.543	198.660	–248.057	27.459	–513.908	–277.826	–280.776	12.222
	1300.00	33.148	224.177	200.523	–244.766	30.750	–536.195	–278.060	–281.012	11.291
	1400.00	33.594	226.650	202.301	–241.428	34.088	–558.738	–278.280	–281.231	10.493
	1500.00	34.001	228.982	204.003	–238.048	37.468	–581.521	–278.488	–281.434	9.800
	1600.00	34.370	231.188	205.634	–234.629	40.887	–604.530	–278.685	–281.624	9.194
	1700.00	34.705	233.282	207.199	–231.175	44.341	–627.755	–278.873	–281.802	8.659
	1800.00	35.008	235.274	208.704	–227.690	47.826	–651.183	–279.052	–281.969	8.183
	1900.00	35.284	237.174	210.153	–224.175	51.341	–674.806	–279.225	–282.126	7.756
	2000.00	35.534	238.991	211.550	–220.634	54.882	–698.615	–279.391	–282.275	7.372
	2100.00	35.762	240.730	212.898	–217.069	58.447	–722.602	–279.553	–282.415	7.025
	2200.00	35.971	242.399	214.201	–213.482	62.034	–746.759	–279.710	–282.548	6.709
	2300.00	36.162	244.002	215.462	–209.875	65.641	–771.079	–279.865	–282.673	6.420
	2400.00	36.338	245.545	216.684	–206.250	69.266	–795.557	–280.017	–282.792	6.155
	2500.00	36.502	247.031	217.868	–202.608	72.908	–820.187	–280.167	–282.904	5.911
	2600.00	36.652	248.466	219.018	–198.950	76.566	–844.962	–280.317	–283.011	5.686
	2700.00	36.792	249.852	220.134	–195.278	80.238	–869.878	–280.465	–283.112	5.477
	2800.00	36.923	251.192	221.220	–191.592	83.924	–894.931	–280.614	–283.207	5.283
	2900.00	37.045	252.490	222.276	–187.894	87.622	–920.115	–280.763	–283.297	5.103
	3000.00	37.160	253.748	223.304	–184.183	91.333	–945.427	–280.912	–283.382	4.934
	3100.00	37.269	254.968	224.306	–180.462	95.054	–970.864	–281.063	–283.462	4.776
	3200.00	37.371	256.153	225.282	–176.730	98.786	–996.420	–281.216	–283.537	4.628
	3300.00	37.468	257.305	226.235	–172.988	102.528	–1022.093	–281.370	–283.607	4.489
	3400.00	37.560	258.425	227.166	–169.236	106.280	–1047.880	–281.527	–283.672	4.358
	3500.00	37.647	259.515	228.075	–165.476	110.040	–1073.777	–281.687	–283.733	4.234
	3600.00	37.731	260.576	228.963	–161.707	113.809	–1099.782	–281.849	–283.789	4.118
	3700.00	37.811	261.611	229.831	–157.930	117.586	–1125.891	–282.015	–283.841	4.007
	3800.00	37.888	262.621	230.681	–154.145	121.371	–1152.103	–282.184	–283.888	3.902
	3900.00	37.962	263.606	231.512	–150.352	125.164	–1178.415	–282.358	–283.930	3.803
	4000.00	38.033	264.568	232.327	–146.553	128.963	–1204.824	–282.535	–283.968	3.708
	4100.00	38.101	265.508	233.125	–142.746	132.770	–1231.327	–282.716	–284.002	3.618
	4200.00	38.168	266.427	233.907	–138.932	136.584	–1257.924	–282.902	–284.031	3.532
	4300.00	38.232	267.326	234.674	–135.112	140.404	–1284.612	–283.092	–284.056	3.451
	4400.00	38.294	268.205	235.426	–131.286	144.230	–1311.389	–283.287	–284.076	3.372
	4500.00	38.355	269.066	236.164	–127.454	148.062	–1338.253	–283.486	–284.092	3.298
	4600.00	38.414	269.910	236.888	–123.615	151.901	–1365.202	–283.691	–284.103	3.226
	4700.00	38.472	270.737	237.600	–119.771	155.745	–1392.234	–283.900	–284.110	3.158
	4800.00	38.528	271.547	238.298	–115.921	159.595	–1419.348	–284.114	–284.112	3.092
	4900.00	38.583	272.342	238.985	–112.065	163.451	–1446.543	–284.333	–284.110	3.029
	5000.00	38.637	273.122	239.660	–108.204	167.312	–1473.816	–284.556	–284.103	2.968

References

Phase	H / S	C_p
GAS	Ja2	Ja2

DH[g] HYDROGEN–D1 (GAS) 3.022

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	29.201	143.803	143.803	0.320	0.000	–42.555	0.320	–1.464	0.256
	300.00	29.201	143.984	143.804	0.374	0.054	–42.821	0.320	–1.475	0.257
	400.00	29.231	152.387	144.949	3.295	2.975	–57.660	0.328	–2.075	0.271
	500.00	29.283	158.915	147.114	6.221	5.901	–73.237	0.327	–2.676	0.280
	600.00	29.394	164.263	149.539	9.154	8.834	–89.404	0.322	–3.276	0.285
	700.00	29.595	168.807	151.975	12.103	11.783	–106.063	0.311	–3.875	0.289
	800.00	29.890	172.778	154.333	15.076	14.756	–123.146	0.296	–4.472	0.292
	900.00	30.269	176.319	156.582	18.083	17.763	–140.604	0.277	–5.066	0.294
	1000.00	30.708	179.531	158.719	21.132	20.812	–158.399	0.257	–5.659	0.296
	1100.00	31.183	182.480	160.747	24.226	23.906	–176.501	0.235	–6.250	0.297
	1200.00	31.674	185.214	162.673	27.369	27.049	–194.888	0.215	–6.838	0.298
	1300.00	32.164	187.768	164.506	30.561	30.241	–213.538	0.195	–7.425	0.298
	1400.00	32.642	190.170	166.254	33.801	33.481	–232.436	0.177	–8.011	0.299
	1500.00	33.101	192.437	167.925	37.089	36.769	–251.568	0.160	–8.595	0.299
	1600.00	33.538	194.588	169.525	40.421	40.101	–270.920	0.146	–9.178	0.300
	1700.00	33.951	196.634	171.060	43.795	43.475	–290.482	0.133	–9.760	0.300
	1800.00	34.341	198.585	172.535	47.210	46.890	–310.243	0.122	–10.342	0.300
	1900.00	34.706	200.452	173.956	50.663	50.343	–330.196	0.112	–10.923	0.300
	2000.00	35.050	202.241	175.326	54.151	53.831	–350.331	0.104	–11.504	0.300
	2100.00	35.372	203.959	176.648	57.672	57.352	–370.642	0.097	–12.084	0.301
	2200.00	35.676	205.612	177.928	61.224	60.904	–391.121	0.091	–12.664	0.301
	2300.00	35.962	207.204	179.166	64.806	64.486	–411.762	0.085	–13.243	0.301
	2400.00	36.233	208.740	180.367	68.416	68.096	–432.560	0.081	–13.823	0.301
	2500.00	36.492	210.224	181.531	72.053	71.733	–453.508	0.078	–14.402	0.301
	2600.00	36.737	211.660	182.663	75.714	75.394	–474.603	0.075	–14.981	0.301
	2700.00	36.972	213.051	183.763	79.400	79.080	–495.839	0.073	–15.560	0.301
	2800.00	37.198	214.400	184.833	83.108	82.788	–517.212	0.072	–16.139	0.301
	2900.00	37.415	215.709	185.875	86.839	86.519	–538.718	0.071	–16.718	0.301
	3000.00	37.625	216.981	186.891	90.591	90.271	–560.352	0.072	–17.297	0.301
	3100.00	37.829	218.218	187.882	94.364	94.044	–582.113	0.072	–17.876	0.301
	3200.00	38.028	219.422	188.848	98.157	97.837	–603.995	0.073	–18.455	0.301
	3300.00	38.223	220.596	189.793	101.969	101.649	–625.996	0.075	–19.034	0.301
	3400.00	38.414	221.739	190.716	105.801	105.481	–648.113	0.077	–19.613	0.301
	3500.00	38.602	222.856	191.618	109.652	109.332	–670.343	0.080	–20.192	0.301
	3600.00	38.787	223.946	192.501	113.521	113.201	–692.683	0.084	–20.772	0.301
	3700.00	38.971	225.011	193.365	117.409	117.089	–715.131	0.088	–21.351	0.301
	3800.00	39.153	226.053	194.212	121.316	120.996	–737.685	0.093	–21.930	0.301
	3900.00	39.334	227.072	195.041	125.240	124.920	–760.341	0.098	–22.510	0.301
	4000.00	39.513	228.070	195.855	129.182	128.862	–783.099	0.104	–23.090	0.302
	4100.00	39.691	229.048	196.652	133.142	132.822	–805.955	0.110	–23.670	0.302
	4200.00	39.867	230.007	197.435	137.120	136.800	–828.908	0.118	–24.250	0.302
	4300.00	40.041	230.947	198.204	141.116	140.796	–851.955	0.126	–24.830	0.302
	4400.00	40.213	231.869	198.958	145.128	144.808	–875.096	0.134	–25.410	0.302
	4500.00	40.383	232.775	199.700	149.158	148.838	–898.329	0.144	–25.991	0.302
	4600.00	40.551	233.664	200.428	153.205	152.885	–921.651	0.154	–26.572	0.302
	4700.00	40.715	234.538	201.145	157.268	156.948	–945.061	0.165	–27.153	0.302
	4800.00	40.876	235.397	201.850	161.348	161.028	–968.558	0.177	–27.735	0.302
	4900.00	41.033	236.242	202.543	165.443	165.123	–992.140	0.189	–28.316	0.302
	5000.00	41.185	237.072	203.225	169.554	169.234	–1015.806	0.203	–28.898	0.302

References

Phase	H / S	C_p
GAS	Ja2	Ja2

20.027 WATER–D2 **D2O**

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
LIQ	298.15	84.350	75.940	75.940	–294.559	0.000	–317.201	–294.559	–243.398	42.642
	300.00	84.342	76.462	75.942	–294.403	0.156	–317.341	–294.484	–243.081	42.324
	374.58	85.039	95.229	77.980	–288.098	6.461	–323.769	–291.462	–230.650	32.164

References

Phase	H / S	C_p	Remarks
LIQ	Nb1,e	La1,e	NBPT= 374.58; BPT= 374.213, L= 41.569 kJ

D2O[g] WATER–D2 (GAS) 20.027

Phase	T	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	34.255	198.339	198.339	–249.203	0.000	–308.338	–249.203	–234.536	41.090
	300.00	34.278	198.551	198.340	–249.140	0.063	–308.705	–249.221	–234.445	40.820
	400.00	35.636	208.592	199.700	–245.646	3.557	–329.083	–250.134	–229.379	29.954
	500.00	37.182	216.707	202.314	–242.006	7.197	–350.360	–250.953	–224.093	23.411
	600.00	38.837	223.631	205.303	–238.206	10.997	–372.385	–251.681	–218.651	19.035
	700.00	40.545	229.746	208.366	–234.237	14.966	–395.059	–252.320	–213.095	15.901
	800.00	42.249	235.272	211.390	–230.097	19.106	–418.315	–252.873	–207.452	13.545
	900.00	43.894	240.344	214.329	–225.789	23.414	–442.099	–253.346	–201.746	11.709
	1000.00	45.423	245.049	217.168	–221.322	27.881	–466.371	–253.744	–195.990	10.237
	1100.00	46.825	249.445	219.905	–216.709	32.494	–491.098	–254.078	–190.198	9.032
	1200.00	48.092	253.575	222.540	–211.962	37.241	–516.251	–254.354	–184.378	8.026
	1300.00	49.226	257.470	225.079	–207.095	42.108	–541.805	–254.581	–178.538	7.174
	1400.00	50.236	261.155	227.525	–202.121	47.082	–567.738	–254.766	–172.681	6.443
	1500.00	51.136	264.653	229.885	–197.051	52.152	–594.030	–254.917	–166.812	5.809
	1600.00	51.937	267.979	232.163	–191.897	57.306	–620.663	–255.038	–160.934	5.254
	1700.00	52.653	271.149	234.363	–186.667	62.536	–647.621	–255.136	–155.050	4.764
	1800.00	53.293	274.177	236.492	–181.369	67.834	–674.888	–255.214	–149.160	4.329
	1900.00	53.866	277.074	238.552	–176.010	73.193	–702.452	–255.277	–143.267	3.939
	2000.00	54.383	279.851	240.548	–170.598	78.605	–730.299	–255.328	–137.370	3.588
	2100.00	54.848	282.516	242.483	–165.136	84.067	–758.418	–255.370	–131.471	3.270
	2200.00	55.270	285.077	244.362	–159.629	89.574	–786.799	–255.406	–125.570	2.981
	2300.00	55.653	287.542	246.186	–154.083	95.120	–815.430	–255.439	–119.668	2.718
	2400.00	56.004	289.918	247.959	–148.500	100.703	–844.304	–255.469	–113.764	2.476
	2500.00	56.326	292.211	249.683	–142.883	106.320	–873.411	–255.499	–107.859	2.254
	2600.00	56.621	294.426	251.362	–137.236	111.967	–902.744	–255.530	–101.953	2.048
	2700.00	56.894	296.568	252.997	–131.560	117.643	–932.294	–255.563	–96.045	1.858
	2800.00	57.146	298.642	254.590	–125.857	123.346	–962.055	–255.600	–90.137	1.682
	2900.00	57.380	300.652	256.144	–120.131	129.072	–992.020	–255.641	–84.226	1.517
	3000.00	57.598	302.601	257.660	–114.382	134.821	–1022.184	–255.688	–78.315	1.364
	3100.00	57.802	304.493	259.141	–108.612	140.591	–1052.539	–255.740	–72.402	1.220
	3200.00	57.993	306.331	260.587	–102.822	146.381	–1083.080	–255.798	–66.487	1.085
	3300.00	58.172	308.118	262.000	–97.014	152.189	–1113.803	–255.863	–60.570	0.959
	3400.00	58.341	309.857	263.382	–91.188	158.015	–1144.702	–255.936	–54.650	0.840
	3500.00	58.501	311.551	264.734	–85.346	163.857	–1175.773	–256.017	–48.729	0.727
	3600.00	58.652	313.201	266.058	–79.488	169.715	–1207.011	–256.106	–42.805	0.621
	3700.00	58.795	314.810	267.354	–73.616	175.587	–1238.412	–256.204	–36.879	0.521
	3800.00	58.931	316.380	268.623	–67.729	181.474	–1269.972	–256.311	–30.950	0.425
	3900.00	59.060	317.912	269.868	–61.830	187.373	–1301.687	–256.427	–25.018	0.335
	4000.00	59.184	319.409	271.087	–55.917	193.286	–1333.553	–256.553	–19.083	0.249
	4100.00	59.301	320.872	272.284	–49.993	199.210	–1365.567	–256.690	–13.144	0.167
	4200.00	59.414	322.302	273.458	–44.057	205.146	–1397.726	–256.836	–7.202	0.090
	4300.00	59.522	323.701	274.610	–38.110	211.093	–1430.027	–256.993	–1.257	0.015
	4400.00	59.626	325.071	275.741	–32.153	217.050	–1462.465	–257.162	4.692	–0.056
	4500.00	59.726	326.412	276.853	–26.185	223.018	–1495.040	–257.341	10.646	–0.124
	4600.00	59.822	327.726	277.944	–20.208	228.995	–1527.747	–257.531	16.603	–0.189
	4700.00	59.914	329.013	279.017	–14.221	234.982	–1560.584	–257.733	22.564	–0.251
	4800.00	60.003	330.276	280.072	–8.225	240.978	–1593.549	–257.946	28.530	–0.310
	4900.00	60.089	331.514	281.109	–2.221	246.982	–1626.638	–258.172	34.501	–0.368
	5000.00	60.172	332.729	282.130	3.792	252.995	–1659.851	–258.408	40.476	–0.423

References

Phase	H / S	C_p
GAS	Ja2	Ja2

34.080 HYDROGEN MONOSULFIDE-D1 (GAS) **DS**[g]

Phase	T [K]	C_p	S	-(G-H298)/T	H	H-H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[-]
GAS	298.15	32.519	201.484	201.484	138.490	0.000	78.418	138.490	109.585	-19.199
	300.00	32.510	201.685	201.485	138.550	0.060	78.045	138.481	109.406	-19.049
	400.00	32.085	210.971	202.754	141.777	3.287	57.389	135.666	99.887	-13.044
	500.00	32.126	218.126	205.139	144.984	6.494	35.920	133.506	91.169	-9.524
	600.00	32.509	224.014	207.808	148.213	9.723	13.805	131.685	82.882	-7.216
	700.00	33.048	229.064	210.492	151.491	13.001	-8.855	130.163	74.870	-5.587
	800.00	33.613	233.514	213.097	154.824	16.334	-31.988	128.624	67.074	-4.380
	900.00	34.147	237.505	215.591	158.212	19.722	-55.542	74.267	60.628	-3.519
	1000.00	34.631	241.128	217.967	161.651	23.161	-79.477	74.304	59.111	-3.088
	1100.00	35.055	244.449	220.225	165.136	26.646	-103.758	74.350	57.590	-2.735
	1200.00	35.425	247.516	222.373	168.661	30.171	-128.358	74.402	56.064	-2.440
	1300.00	35.747	250.364	224.418	172.220	33.730	-153.254	74.455	54.533	-2.191
	1400.00	36.028	253.024	226.367	175.809	37.319	-178.424	74.509	52.999	-1.977
	1500.00	36.275	255.518	228.229	179.424	40.934	-203.853	74.561	51.461	-1.792
	1600.00	36.493	257.866	230.008	183.063	44.573	-229.523	74.610	49.919	-1.630
	1700.00	36.687	260.085	231.713	186.722	48.232	-255.422	74.656	48.374	-1.486
	1800.00	36.860	262.187	233.348	190.400	51.910	-281.536	74.698	46.827	-1.359
	1900.00	37.016	264.184	234.919	194.094	55.604	-307.856	74.735	45.278	-1.245
	2000.00	37.157	266.086	236.430	197.802	59.312	-334.370	74.768	43.726	-1.142
	2100.00	37.286	267.902	237.886	201.525	63.035	-361.070	74.796	42.174	-1.049
	2200.00	37.404	269.639	239.290	205.259	66.769	-387.948	74.820	40.620	-0.964
	2300.00	37.514	271.305	240.646	209.005	70.515	-414.995	74.838	39.065	-0.887
	2400.00	37.616	272.903	241.957	212.762	74.272	-442.206	74.852	37.509	-0.816
	2500.00	37.712	274.441	243.226	216.528	78.038	-469.574	74.860	35.953	-0.751
	2600.00	37.802	275.922	244.455	220.304	81.814	-497.093	74.864	34.396	-0.691
	2700.00	37.886	277.350	245.647	224.088	85.598	-524.757	74.863	32.840	-0.635
	2800.00	37.967	278.729	246.804	227.881	89.391	-552.561	74.857	31.284	-0.584
	2900.00	38.044	280.063	247.928	231.682	93.192	-580.501	74.846	29.728	-0.535
	3000.00	38.117	281.354	249.021	235.490	97.000	-608.572	74.830	28.172	-0.491
	3100.00	38.188	282.605	250.084	239.305	100.815	-636.770	74.809	26.617	-0.448
	3200.00	38.256	283.818	251.119	243.127	104.637	-665.092	74.782	25.063	-0.409
	3300.00	38.322	284.997	252.128	246.956	108.466	-693.533	74.751	23.510	-0.372
	3400.00	38.386	286.142	253.112	250.791	112.301	-722.090	74.714	21.958	-0.337
	3500.00	38.448	287.255	254.071	254.633	116.143	-750.760	74.672	20.406	-0.305
	3600.00	38.509	288.339	255.008	258.481	119.991	-779.540	74.625	18.857	-0.274
	3700.00	38.569	289.395	255.924	262.335	123.845	-808.427	74.573	17.308	-0.244
	3800.00	38.628	290.425	256.818	266.195	127.705	-837.418	74.514	15.761	-0.217
	3900.00	38.686	291.429	257.693	270.061	131.571	-866.511	74.451	14.216	-0.190
	4000.00	38.744	292.409	258.548	273.932	135.442	-895.703	74.382	12.672	-0.165
	4100.00	38.801	293.366	259.386	277.809	139.319	-924.992	74.307	11.131	-0.142
	4200.00	38.858	294.302	260.206	281.692	143.202	-954.376	74.227	9.591	-0.119
	4300.00	38.915	295.217	261.010	285.581	147.091	-983.852	74.142	8.053	-0.098
	4400.00	38.972	296.112	261.797	289.475	150.985	-1013.419	74.051	6.517	-0.077
	4500.00	39.029	296.989	262.570	293.375	154.885	-1043.074	73.955	4.983	-0.058
	4600.00	39.087	297.847	263.327	297.281	158.791	-1072.816	73.854	3.451	-0.039
	4700.00	39.145	298.688	264.071	301.193	162.703	-1102.643	73.748	1.922	-0.021
	4800.00	39.204	299.513	264.801	305.110	166.620	-1132.553	73.637	0.395	-0.004
	4900.00	39.264	300.322	265.517	309.034	170.544	-1162.545	73.522	-1.130	0.012
	5000.00	39.324	301.116	266.221	312.963	174.473	-1192.617	73.402	-2.652	0.028

References

Phase	H / S	C_p
GAS	Ja2	Ja2

D2S[g] HYDROGEN SULFIDE–D2 (GAS) 36.094

Phase	T	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	35.761	215.284	215.284	–23.891	0.000	–88.078	–23.891	–35.301	6.185
	300.00	35.794	215.505	215.285	–23.825	0.066	–88.476	–23.921	–35.371	6.159
	400.00	37.999	226.094	216.713	–20.139	3.752	–110.576	–27.738	–38.857	5.074
	500.00	40.342	234.824	219.486	–16.222	7.669	–133.634	–30.652	–41.317	4.316
	600.00	42.673	242.387	222.686	–12.071	11.820	–157.503	–33.025	–43.216	3.762
	700.00	44.836	249.131	225.991	–7.693	16.198	–182.084	–34.937	–44.759	3.340
	800.00	46.748	255.236	229.270	–3.118	20.773	–207.307	–36.747	–46.039	3.006
	900.00	48.488	260.848	232.472	1.648	25.539	–233.115	–91.265	–45.943	2.666
	1000.00	49.827	266.028	235.572	6.566	30.457	–259.463	–91.318	–40.903	2.137
	1100.00	51.028	270.834	238.561	11.609	35.500	–286.309	–91.309	–35.862	1.703
	1200.00	52.049	275.320	241.440	16.766	40.657	–313.619	–91.249	–30.823	1.342
	1300.00	52.923	279.522	244.209	22.015	45.906	–341.363	–91.156	–25.792	1.036
	1400.00	53.672	283.472	246.874	27.346	51.237	–369.515	–91.037	–20.768	0.775
	1500.00	54.320	287.198	249.439	32.747	56.638	–398.050	–90.900	–15.753	0.549
	1600.00	54.886	290.722	251.910	38.207	62.098	–426.948	–90.749	–10.748	0.351
	1700.00	55.382	294.065	254.293	43.721	67.612	–456.188	–90.590	–5.753	0.177
	1800.00	55.819	297.243	256.591	49.282	73.173	–485.755	–90.424	–0.767	0.022
	1900.00	56.210	300.271	258.811	54.884	78.775	–515.632	–90.254	4.209	–0.116
	2000.00	56.567	303.164	260.957	60.523	84.414	–545.805	–90.083	9.176	–0.240
	2100.00	56.882	305.931	263.033	66.195	90.086	–576.260	–89.910	14.135	–0.352
	2200.00	57.169	308.584	265.044	71.898	95.789	–606.987	–89.738	19.085	–0.453
	2300.00	57.432	311.131	266.993	77.628	101.519	–637.974	–89.567	24.028	–0.546
	2400.00	57.674	313.581	268.883	83.384	107.275	–669.210	–89.398	28.963	–0.630
	2500.00	57.898	315.940	270.718	89.163	113.054	–700.687	–89.231	33.891	–0.708
	2600.00	58.106	318.215	272.502	94.963	118.854	–732.395	–89.068	38.813	–0.780
	2700.00	58.299	320.411	274.236	100.783	124.674	–764.327	–88.909	43.729	–0.846
	2800.00	58.481	322.535	275.923	106.622	130.513	–796.475	–88.753	48.638	–0.907
	2900.00	58.651	324.590	277.566	112.479	136.370	–828.832	–88.603	53.542	–0.964
	3000.00	58.812	326.581	279.167	118.352	142.243	–861.391	–88.457	58.441	–1.018
	3100.00	58.964	328.512	280.727	124.241	148.132	–894.146	–88.317	63.336	–1.067
	3200.00	59.109	330.386	282.250	130.145	154.036	–927.092	–88.182	68.226	–1.114
	3300.00	59.247	332.207	283.737	136.063	159.954	–960.222	–88.054	73.111	–1.157
	3400.00	59.380	333.978	285.188	141.994	165.885	–993.531	–87.932	77.993	–1.198
	3500.00	59.507	335.701	286.607	147.939	171.830	–1027.016	–87.816	82.872	–1.237
	3600.00	59.629	337.379	287.994	153.895	177.786	–1060.670	–87.708	87.747	–1.273
	3700.00	59.748	339.015	289.351	159.864	183.755	–1094.490	–87.608	92.619	–1.308
	3800.00	59.862	340.610	290.679	165.845	189.736	–1128.472	–87.515	97.489	–1.340
	3900.00	59.973	342.166	291.979	171.837	195.728	–1162.611	–87.429	102.356	–1.371
	4000.00	60.081	343.686	293.253	177.839	201.730	–1196.904	–87.353	107.222	–1.400
	4100.00	60.187	345.171	294.501	183.853	207.744	–1231.347	–87.284	112.085	–1.428
	4200.00	60.289	346.622	295.725	189.877	213.768	–1265.937	–87.224	116.947	–1.454
	4300.00	60.390	348.042	296.925	195.911	219.802	–1300.670	–87.173	121.808	–1.480
	4400.00	60.488	349.432	298.103	201.955	225.846	–1335.544	–87.131	126.667	–1.504
	4500.00	60.585	350.792	299.259	208.008	231.899	–1370.556	–87.097	131.526	–1.527
	4600.00	60.679	352.125	300.394	214.071	237.962	–1405.702	–87.072	136.384	–1.549
	4700.00	60.772	353.431	301.508	220.144	244.035	–1440.980	–87.056	141.242	–1.570
	4800.00	60.864	354.711	302.603	226.226	250.117	–1476.387	–87.048	146.099	–1.590
	4900.00	60.954	355.967	303.680	232.317	256.208	–1511.921	–87.049	150.956	–1.609
	5000.00	61.043	357.199	304.738	238.417	262.308	–1547.579	–87.058	155.813	–1.628

References

Phase	H / S	C_p
GAS	Ja2	Ja2

162.500

DYSPROSIUM

Dy

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	28.116	74.894	74.894	0.000	0.000	−22.330	0.000	0.000	0.000
	300.00	28.115	75.068	74.894	0.052	0.052	−22.468	0.000	0.000	0.000
	400.00	28.074	83.150	75.996	2.861	2.861	−30.399	0.000	0.000	0.000
	500.00	28.090	89.410	78.076	5.667	5.667	−39.038	0.000	0.000	0.000
	600.00	28.432	94.558	80.406	8.491	8.491	−48.244	0.000	0.000	0.000
	700.00	28.939	98.977	82.751	11.358	11.358	−57.926	0.000	0.000	0.000
	800.00	29.534	102.880	85.028	14.282	14.282	−68.022	0.000	0.000	0.000
	900.00	30.410	106.409	87.210	17.279	17.279	−78.489	0.000	0.000	0.000
	1000.00	31.760	109.678	89.295	20.383	20.383	−89.295	0.000	0.000	0.000
	1100.00	33.578	112.787	91.290	23.646	23.646	−100.420	0.000	0.000	0.000
	1200.00	35.801	115.801	93.208	27.112	27.112	−111.850	0.000	0.000	0.000
	1300.00	38.385	118.766	95.060	30.818	30.818	−123.578	0.000	0.000	0.000
	1400.00	41.305	121.716	96.859	34.800	34.800	−135.602	0.000	0.000	0.000
	1500.00	44.542	124.674	98.614	39.090	39.090	−147.922	0.000	0.000	0.000
	1600.00	48.083	127.660	100.336	43.719	43.719	−160.538	0.000	0.000	0.000
	1657.00	50.234	129.381	101.306	46.520	46.520	−167.864	0.000	0.000	0.000
			2.512		4.163					
SOL−B	1657.00	28.033	131.893	101.306	50.683	50.683	−167.864	0.000	0.000	0.000
	1682.00	28.033	132.313	101.764	51.384	51.384	−171.166	0.000	0.000	0.000
			6.574		11.058					
LIQ	1682.00	49.915	138.887	101.764	62.442	62.442	−171.166	0.000	0.000	0.000
	1700.00	49.915	139.419	102.159	63.341	63.341	−173.671	0.000	0.000	0.000
	1800.00	49.915	142.272	104.309	68.332	68.332	−187.757	0.000	0.000	0.000
	1900.00	49.915	144.970	106.379	73.324	73.324	−202.120	0.000	0.000	0.000
	2000.00	49.915	147.531	108.373	78.315	78.315	−216.746	0.000	0.000	0.000
	2100.00	49.915	149.966	110.296	83.307	83.307	−231.622	0.000	0.000	0.000
	2200.00	49.915	152.288	112.153	88.298	88.298	−246.736	0.000	0.000	0.000
	2300.00	49.915	154.507	113.946	93.290	93.290	−262.076	0.000	0.000	0.000
	2400.00	49.915	156.631	115.681	98.281	98.281	−277.634	0.000	0.000	0.000
	2500.00	49.915	158.669	117.360	103.273	103.273	−293.400	0.000	0.000	0.000
	2600.00	49.915	160.627	118.987	108.264	108.264	−309.365	0.000	0.000	0.000
	2700.00	49.915	162.510	120.564	113.256	113.256	−325.523	0.000	0.000	0.000
	2800.00	49.915	164.326	122.095	118.247	118.247	−341.865	0.000	0.000	0.000
	2831.00	49.915	164.875	122.560	119.795	119.795	−346.968	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks	
SOL−A	Hu1	Hu1		
SOL−B	Hu1	Hu1		
LIQ	Hu1	Hu1	Hu1	BPT= 2831., L= 230. kJ

Dy[g] DYSPROSIUM (GAS) 162.500

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	20.786	195.896	195.896	290.370	0.000	231.964	290.370	254.293	–44.551
	300.00	20.786	196.024	195.896	290.408	0.038	231.601	290.356	254.069	–44.237
	400.00	20.786	202.004	196.711	292.487	2.117	211.686	289.626	242.084	–31.613
	500.00	20.786	206.642	198.251	294.566	4.196	191.245	288.899	230.283	–24.057
	600.00	20.786	210.432	199.975	296.644	6.274	170.385	288.153	218.629	–19.033
	700.00	20.786	213.636	201.703	298.723	8.353	149.178	287.364	207.103	–15.454
	800.00	20.786	216.412	203.372	300.802	10.432	127.672	286.520	195.694	–12.778
	900.00	21.202	218.897	204.962	302.912	12.542	105.904	285.633	184.394	–10.702
	1000.00	21.458	221.144	206.469	305.044	14.674	83.901	284.662	173.196	–9.047
	1100.00	21.768	223.203	207.898	307.205	16.835	61.682	283.559	162.101	–7.698
	1200.00	22.114	225.112	209.254	309.399	19.029	39.265	282.287	151.115	–6.578
	1300.00	22.482	226.896	210.543	311.629	21.259	16.664	280.811	140.242	–5.635
	1400.00	22.861	228.576	211.772	313.896	23.526	–6.111	279.096	129.492	–4.831
	1500.00	23.243	230.167	212.946	316.201	25.831	–29.049	277.111	118.873	–4.140
	1600.00	23.622	231.679	214.070	318.545	28.175	–52.141	274.826	108.397	–3.539
	1700.00	23.991	233.122	215.148	320.925	30.555	–75.382	257.585	98.289	–3.020
	1800.00	24.349	234.503	216.185	323.342	32.972	–98.764	255.010	88.993	–2.583
	1900.00	24.691	235.829	217.185	325.795	35.425	–122.281	252.471	79.839	–2.195
	2000.00	25.016	237.104	218.149	328.280	37.910	–145.928	249.965	70.818	–1.850
	2100.00	25.322	238.332	219.081	330.797	40.427	–169.700	247.491	61.922	–1.540
	2200.00	25.606	239.517	219.983	333.344	42.974	–193.593	245.046	53.143	–1.262
	2300.00	25.869	240.661	220.857	335.918	45.548	–217.602	242.628	44.474	–1.010
	2400.00	26.108	241.767	221.706	338.517	48.147	–241.724	240.236	35.910	–0.782
	2500.00	26.324	242.837	222.530	341.139	50.769	–265.954	237.866	27.445	–0.573
	2600.00	26.515	243.873	223.331	343.781	53.411	–290.290	235.516	19.075	–0.383
	2700.00	26.681	244.877	224.110	346.441	56.071	–314.728	233.185	10.795	–0.209
	2800.00	26.821	245.850	224.869	349.116	58.746	–339.264	230.869	2.601	–0.049
	2900.00	26.935	246.793	225.609	351.804	61.434	–363.897	0.000	0.000	0.000
	3000.00	27.023	247.708	226.331	354.502	64.132	–388.622	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1

402.212

DYSPROSIUM BROMIDE (GAS) **DyBr3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	79.886	404.096	404.096	−540.154	0.000	−660.635	−540.154	−570.234	99.903
	300.00	79.920	404.590	404.097	−540.006	0.148	−661.383	−540.268	−570.420	99.319
	400.00	81.207	427.778	407.250	−531.943	8.211	−703.054	−586.737	−570.931	74.556
	500.00	81.955	445.985	413.241	−523.782	16.372	−746.775	−586.920	−566.957	59.230
	600.00	82.492	460.977	419.984	−515.559	24.595	−792.145	−587.098	−562.948	49.009
	700.00	82.929	473.727	426.774	−507.287	32.867	−838.896	−587.297	−558.908	41.706
	800.00	83.312	484.826	433.352	−498.975	41.179	−886.835	−587.529	−554.837	36.227
	900.00	83.664	494.659	439.628	−490.626	49.528	−935.819	−587.814	−550.734	31.964
	1000.00	83.997	503.491	445.580	−482.242	57.912	−985.734	−588.183	−546.595	28.551
	1100.00	84.317	511.512	451.215	−473.827	66.327	−1036.490	−588.690	−542.413	25.757
	1200.00	84.629	518.862	456.550	−465.379	74.775	−1088.014	−589.378	−538.177	23.426
	1300.00	84.934	525.648	461.607	−456.901	83.253	−1140.244	−590.284	−533.875	21.451
	1400.00	85.236	531.954	466.410	−448.393	91.761	−1193.127	−591.445	−529.494	19.756
	1500.00	85.534	537.844	470.978	−439.854	100.300	−1246.621	−592.892	−525.020	18.283
	1600.00	85.829	543.374	475.331	−431.286	108.868	−1300.684	−594.656	−520.440	16.991
	1700.00	86.123	548.586	479.489	−422.688	117.466	−1355.285	−611.392	−515.523	15.840
	1800.00	86.415	553.517	483.466	−414.061	126.093	−1410.392	−613.476	−509.823	14.795
	1900.00	86.706	558.197	487.277	−405.405	134.749	−1465.980	−615.538	−504.008	13.856
	2000.00	86.997	562.652	490.935	−396.720	143.434	−1522.024	−617.579	−498.086	13.009

References

Phase	H / S	C_p
GAS	Pa2	Pa2

268.858

DYSPROSIUM CHLORIDE **DyCl3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL−B	298.15	97.068	153.971	153.971	−989.934	0.000	−1035.841	−989.934	−913.728	160.081
	300.00	97.161	154.572	153.973	−989.754	0.180	−1036.126	−989.901	−913.255	159.012
	400.00	100.912	183.087	157.835	−979.833	10.101	−1053.068	−987.990	−887.989	115.960
	500.00	103.363	205.882	165.241	−969.613	20.321	−1072.554	−985.931	−863.225	90.180
	600.00	105.303	224.904	173.643	−959.177	30.757	−1094.120	−983.772	−838.885	73.031
	700.00	107.002	241.266	182.161	−948.561	41.373	−1117.447	−981.538	−814.913	60.810
	800.00	108.572	255.658	190.467	−937.781	52.153	−1142.307	−979.240	−791.265	51.664
	900.00	110.068	268.533	198.438	−926.849	63.085	−1168.528	−976.893	−767.909	44.568
	924.00	110.419	271.434	200.296	−924.203	65.731	−1175.008	−976.325	−762.343	43.096
			27.621		25.522					
LIQ	924.00	144.766	299.055	200.296	−898.681	91.253	−1175.008	−950.803	−762.343	43.096
	1000.00	144.766	310.498	208.243	−887.679	102.255	−1198.177	−946.439	−747.018	39.020

References

Phase	H / S	C_p
SOL−B	Pa2	Pa2
LIQ	Dw4	Dw4

DyCl3[g] DYSPROSIUM CHLORIDE (GAS) 268.858

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[	kJ / mol	]			[−]
GAS	298.15	78.144	376.485	376.485	−677.390	0.000	−789.639	−677.390	−667.526	116.948
	300.00	78.198	376.969	376.487	−677.245	0.145	−790.336	−677.392	−667.465	116.216
	400.00	80.204	399.775	379.583	−669.313	8.077	−829.223	−677.469	−664.144	86.728
	500.00	81.288	417.799	385.486	−661.234	16.156	−870.133	−677.552	−660.804	69.034
	600.00	82.010	432.687	392.148	−653.067	24.323	−912.679	−677.662	−657.444	57.236
	700.00	82.559	445.371	398.868	−644.838	32.552	−956.597	−677.815	−654.063	48.807
	800.00	83.018	456.426	405.386	−636.558	40.832	−1001.699	−678.017	−650.657	42.484
	900.00	83.423	466.228	411.612	−628.236	49.154	−1047.841	−678.280	−647.222	37.564
	1000.00	83.795	475.037	417.522	−619.875	57.515	−1094.912	−678.635	−643.753	33.626
	1100.00	84.146	483.040	423.120	−611.477	65.913	−1142.822	−679.132	−640.242	30.403
	1200.00	84.482	490.376	428.423	−603.046	74.344	−1191.498	−679.812	−636.678	27.714
	1300.00	84.808	497.152	433.453	−594.581	82.809	−1240.878	−680.713	−633.049	25.436
	1400.00	85.127	503.448	438.230	−586.085	91.305	−1290.912	−681.870	−629.341	23.481
	1500.00	85.439	509.332	442.776	−577.556	99.834	−1341.554	−683.314	−625.540	21.783
	1600.00	85.748	514.856	447.110	−568.997	108.393	−1392.766	−685.078	−621.633	20.294
	1700.00	86.053	520.064	451.250	−560.407	116.983	−1444.515	−701.814	−617.389	18.970
	1800.00	86.356	524.991	455.211	−551.786	125.604	−1496.770	−703.901	−612.362	17.770
	1900.00	86.657	529.668	459.008	−543.136	134.254	−1549.505	−705.968	−607.220	16.694
	2000.00	86.956	534.120	462.653	−534.455	142.935	−1602.696	−708.016	−601.970	15.722

References

Phase	H / S	C_p
GAS	Pa2	Pa2

DyCl3*6H2O DYSPROSIUM CHLORIDE HEXAHYDRATE 376.950

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[	kJ / mol	]			[−]
SOL	298.15	346.015	401.664	401.664	−2869.998	0.000	−2989.754	−2869.998	−2450.374	429.295
	300.00	346.068	403.805	401.671	−2869.358	0.640	−2990.499	−2869.987	−2447.770	426.195
	400.00	348.559	503.717	415.276	−2834.622	35.376	−3036.109	−2869.610	−2307.098	301.276
	500.00	350.678	581.728	441.048	−2799.658	70.340	−3090.522	−2869.521	−2166.486	226.331
	600.00	352.651	645.840	469.994	−2764.491	105.507	−3151.995	−2869.683	−2025.867	176.367

References

Phase	H / S	C_p
SOL	Nb1	e

219.495

DYSPROSIUM FLUORIDE

DyF3

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	94.151	118.826	118.826	–1692.010	0.000	–1727.438	–1692.010	–1614.413	282.839
	300.00	94.257	119.408	118.827	–1691.836	0.174	–1727.658	–1691.975	–1613.932	281.011
	400.00	98.739	147.185	122.584	–1682.170	9.840	–1741.044	–1689.938	–1588.219	207.400
	500.00	101.992	169.581	129.815	–1672.127	19.883	–1756.918	–1687.746	–1563.040	163.290
	600.00	104.760	188.426	138.054	–1661.787	30.223	–1774.842	–1685.439	–1538.314	133.922
	700.00	107.300	204.767	146.442	–1651.183	40.827	–1794.520	–1683.028	–1513.982	112.975
	800.00	109.717	219.254	154.655	–1640.331	51.679	–1815.734	–1680.508	–1490.004	97.287
	900.00	112.064	232.313	162.570	–1629.242	62.768	–1838.323	–1677.888	–1466.347	85.105
	1000.00	114.367	244.240	170.149	–1617.920	74.090	–1862.159	–1675.190	–1442.986	75.374
	1100.00	116.641	255.247	177.391	–1606.369	85.641	–1887.140	–1672.463	–1419.898	67.425
	1200.00	118.896	265.493	184.311	–1594.592	97.418	–1913.183	–1669.744	–1397.058	60.812
	1300.00	121.137	275.098	190.929	–1582.590	109.420	–1940.218	–1667.068	–1374.443	55.226
	1400.00	123.368	284.157	197.268	–1570.365	121.645	–1968.185	–1664.469	–1352.031	50.445
	1430.00	124.035	286.780	199.118	–1566.654	125.356	–1976.749	–1663.709	–1345.344	49.142
			40.962		58.576					
LIQ	1430.00	156.900	327.742	199.118	–1508.078	183.932	–1976.749	–1605.133	–1345.344	49.142
	1500.00	156.900	335.240	205.297	–1497.095	194.915	–1999.955	–1601.154	–1332.724	46.410
	1600.00	156.900	345.366	213.738	–1481.405	210.605	–2033.991	–1595.778	–1315.006	42.931
	1700.00	156.900	354.878	221.763	–1465.715	226.295	–2069.008	–1605.412	–1297.397	39.864
	1800.00	156.900	363.846	229.410	–1450.025	241.985	–2104.948	–1600.433	–1279.422	37.128
	1900.00	156.900	372.330	236.711	–1434.335	257.675	–2141.761	–1595.468	–1261.723	34.687
	2000.00	156.900	380.377	243.695	–1418.645	273.365	–2179.400	–1590.519	–1244.286	32.497

References

Phase	H / S	C_p
SOL	Pa2	Pa2
LIQ	Pa2	Pa2

DyF3[g] DYSPROSIUM FLUORIDE (GAS) 219.495

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	71.315	341.110	341.110	−1245.577	0.000	−1347.279	−1245.577	−1234.254	216.236
	300.00	71.439	341.551	341.111	−1245.445	0.132	−1347.910	−1245.584	−1234.184	214.891
	400.00	75.932	362.803	343.978	−1238.047	7.530	−1383.168	−1245.816	−1230.343	160.666
	500.00	78.218	380.016	349.520	−1230.329	15.248	−1420.337	−1245.948	−1226.459	128.127
	600.00	79.635	394.411	355.835	−1222.432	23.145	−1459.078	−1246.084	−1222.550	106.432
	700.00	80.641	406.766	362.249	−1214.415	31.162	−1499.151	−1246.261	−1218.614	90.934
	800.00	81.429	417.587	368.504	−1206.311	39.266	−1540.380	−1246.488	−1214.649	79.308
	900.00	82.090	427.217	374.502	−1198.134	47.443	−1582.629	−1246.780	−1210.653	70.264
	1000.00	82.671	435.897	380.215	−1189.895	55.682	−1625.792	−1247.166	−1206.619	63.027
	1100.00	83.201	443.801	385.641	−1181.601	63.976	−1669.783	−1247.695	−1202.540	57.104
	1200.00	83.696	451.062	390.795	−1173.256	72.321	−1714.531	−1248.408	−1198.405	52.165
	1300.00	84.166	457.780	395.692	−1164.863	80.714	−1759.977	−1249.341	−1194.202	47.984
	1400.00	84.618	464.034	400.353	−1156.423	89.154	−1806.071	−1250.528	−1189.918	44.396
	1500.00	85.057	469.887	404.796	−1147.940	97.637	−1852.770	−1251.999	−1185.539	41.284
	1600.00	85.486	475.390	409.038	−1139.412	106.165	−1900.037	−1253.785	−1181.052	38.557
	1700.00	85.907	480.586	413.095	−1130.843	114.734	−1947.838	−1270.540	−1176.227	36.141
	1800.00	86.322	485.508	416.982	−1122.231	123.346	−1996.145	−1272.639	−1170.618	33.970
	1900.00	86.732	490.186	420.713	−1113.578	131.999	−2044.932	−1274.712	−1164.894	32.025
	2000.00	87.138	494.645	424.299	−1104.885	140.692	−2094.175	−1276.759	−1159.061	30.272

References

Phase	H / S	C_p
GAS	Pa2	Pa2

543.213

DYSPROSIUM IODIDE (GAS) **DyI3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	81.477	432.488	432.488	−332.210	0.000	−461.156	−332.210	−386.885	67.781
	300.00	81.493	432.992	432.490	−332.059	0.151	−461.957	−332.262	−387.224	67.422
	400.00	82.167	456.537	435.695	−323.873	8.337	−506.488	−359.344	−404.261	52.791
	500.00	82.619	474.923	441.769	−315.633	16.577	−553.095	−426.199	−409.020	42.730
	600.00	82.983	490.020	448.590	−307.352	24.858	−601.364	−426.370	−405.569	35.308
	700.00	83.305	502.836	455.447	−299.038	33.172	−651.023	−426.567	−402.087	30.004
	800.00	83.605	513.980	462.082	−290.692	41.518	−701.876	−426.802	−398.574	26.024
	900.00	83.893	523.844	468.407	−282.317	49.893	−753.776	−427.095	−395.029	22.927
	1000.00	84.172	532.697	474.401	−273.914	58.296	−806.611	−427.477	−391.447	20.447
	1100.00	84.446	540.732	480.071	−265.483	66.727	−860.288	−428.002	−387.820	18.416
	1200.00	84.717	548.092	485.437	−257.025	75.185	−914.735	−428.711	−384.137	16.721
	1300.00	84.985	554.883	490.521	−248.540	83.670	−969.888	−429.644	−380.386	15.284
	1400.00	85.251	561.191	495.347	−240.028	92.182	−1025.695	−430.835	−376.554	14.049
	1500.00	85.516	567.082	499.935	−231.489	100.721	−1082.112	−432.316	−372.627	12.976
	1600.00	85.780	572.609	504.306	−222.924	109.286	−1139.100	−434.119	−368.591	12.033
	1700.00	86.044	577.818	508.479	−214.333	117.877	−1196.623	−450.898	−364.216	11.191
	1800.00	86.306	582.743	512.469	−205.716	126.494	−1254.654	−453.029	−359.055	10.420
	1900.00	86.568	587.417	516.291	−197.072	135.138	−1313.164	−455.143	−353.777	9.726
	2000.00	86.830	591.864	519.960	−188.402	143.808	−1372.130	−457.239	−348.387	9.099

References

Phase	H / S	C_p
GAS	Pa2	Pa2

Dy_2O_3 DYSPROSIUM OXIDE 372.998

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	115.360	149.800	149.800	–1863.102	0.000	–1907.765	–1863.102	–1771.359	310.335
	300.00	115.627	150.514	149.802	–1862.888	0.214	–1908.043	–1863.074	–1770.790	308.322
	400.00	125.687	185.323	154.480	–1850.764	12.338	–1924.894	–1861.026	–1740.312	227.261
	500.00	131.378	214.028	163.605	–1837.890	25.212	–1944.904	–1858.350	–1710.435	178.688
	600.00	135.348	238.349	174.087	–1824.545	38.557	–1967.554	–1855.392	–1681.127	146.355
	700.00	138.506	259.457	184.808	–1810.847	52.255	–1992.467	–1852.312	–1652.325	123.298
	800.00	141.231	278.133	195.328	–1796.858	66.244	–2019.365	–1849.174	–1623.969	106.034
	900.00	143.704	294.913	205.477	–1782.609	80.493	–2048.031	–1846.028	–1596.007	92.630
	1000.00	146.022	310.175	215.195	–1768.122	94.980	–2078.297	–1842.942	–1568.394	81.924
	1100.00	148.237	324.196	224.475	–1753.409	109.693	–2110.025	–1840.019	–1541.082	73.180
	1200.00	150.382	337.187	233.333	–1738.477	124.625	–2143.102	–1837.342	–1514.026	65.904
	1300.00	152.479	349.307	241.793	–1723.334	139.768	–2177.433	–1834.986	–1487.181	59.756
	1400.00	154.540	360.683	249.883	–1707.983	155.119	–2212.938	–1833.019	–1460.503	54.492
	1500.00	156.575	371.414	257.631	–1692.427	170.675	–2249.548	–1831.504	–1433.951	49.935
	1600.00	158.589	381.584	265.063	–1676.668	186.434	–2287.202	–1830.504	–1407.483	45.950
	1700.00	160.589	391.258	272.204	–1660.709	202.393	–2325.848	–1859.326	–1380.629	42.422
	1800.00	162.576	400.494	279.076	–1644.551	218.551	–2365.440	–1858.725	–1352.487	39.248
	1900.00	164.553	409.337	285.701	–1628.194	234.908	–2405.934	–1857.961	–1324.382	36.410
	2000.00	166.523	417.827	292.097	–1611.641	251.461	–2447.295	–1857.034	–1296.322	33.856

References

Phase	H / S	C_p
SOL	Nb1,H7	e

167.260 ERBIUM **Er**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	28.085	73.178	73.178	0.000	0.000	−21.818	0.000	0.000	0.000
	300.00	28.090	73.352	73.179	0.052	0.052	−21.954	0.000	0.000	0.000
	400.00	28.382	81.472	74.284	2.875	2.875	−29.714	0.000	0.000	0.000
	500.00	28.740	87.842	76.381	5.731	5.731	−38.190	0.000	0.000	0.000
	600.00	29.193	93.121	78.743	8.626	8.626	−47.246	0.000	0.000	0.000
	700.00	29.750	97.661	81.129	11.573	11.573	−56.790	0.000	0.000	0.000
	800.00	30.418	101.676	83.451	14.580	14.580	−66.761	0.000	0.000	0.000
	900.00	31.197	105.303	85.681	17.660	17.660	−77.112	0.000	0.000	0.000
	1000.00	32.089	108.635	87.812	20.823	20.823	−87.812	0.000	0.000	0.000
	1100.00	33.094	111.740	89.847	24.082	24.082	−98.832	0.000	0.000	0.000
	1200.00	34.213	114.666	91.795	27.446	27.446	−110.154	0.000	0.000	0.000
	1300.00	35.446	117.453	93.662	30.928	30.928	−121.761	0.000	0.000	0.000
	1400.00	36.793	120.128	95.457	34.539	34.539	−133.640	0.000	0.000	0.000
	1500.00	38.254	122.716	97.189	38.291	38.291	−145.783	0.000	0.000	0.000
	1600.00	39.830	125.234	98.863	42.194	42.194	−158.181	0.000	0.000	0.000
	1700.00	41.519	127.699	100.487	46.260	46.260	−170.828	0.000	0.000	0.000
	1795.00	43.230	130.003	101.989	50.285	50.285	−183.069	0.000	0.000	0.000
			11.088		19.903					
LIQ	1795.00	38.702	141.091	101.989	70.188	70.188	−183.069	0.000	0.000	0.000
	1800.00	38.702	141.198	102.097	70.382	70.382	−183.775	0.000	0.000	0.000
	1900.00	38.702	143.291	104.211	74.252	74.252	−198.001	0.000	0.000	0.000
	2000.00	38.702	145.276	106.215	78.122	78.122	−212.430	0.000	0.000	0.000
	2100.00	38.702	147.164	108.120	81.992	81.992	−227.053	0.000	0.000	0.000
	2200.00	38.702	148.965	109.936	85.862	85.862	−241.860	0.000	0.000	0.000
	2300.00	38.702	150.685	111.671	89.733	89.733	−256.843	0.000	0.000	0.000
	2400.00	38.702	152.332	113.331	93.603	93.603	−271.994	0.000	0.000	0.000
	2500.00	38.702	153.912	114.923	97.473	97.473	−287.307	0.000	0.000	0.000
	2600.00	38.702	155.430	116.452	101.343	101.343	−302.775	0.000	0.000	0.000
	2700.00	38.702	156.891	117.923	105.213	105.213	−318.391	0.000	0.000	0.000
	2800.00	38.702	158.298	119.340	109.084	109.084	−334.151	0.000	0.000	0.000
	2900.00	38.702	159.656	120.707	112.954	112.954	−350.049	0.000	0.000	0.000
	3000.00	38.702	160.968	122.027	116.824	116.824	−366.081	0.000	0.000	0.000
	3100.00	38.702	162.237	123.304	120.694	120.694	−382.241	0.000	0.000	0.000
	3132.00	38.702	162.635	123.703	121.933	121.933	−387.439	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks	
SOL	Hu1	Hu1		
LIQ	Hu1	Hu1	Hu1	BPT= 3132., L= 261.4 kJ

Er[g] ERBIUM (GAS) 167.260

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	20.786	194.025	194.025	317.147	0.000	259.298	317.147	281.116	−49.250
	300.00	20.786	194.154	194.026	317.185	0.038	258.939	317.133	280.893	−48.908
	400.00	20.787	200.134	194.841	319.264	2.117	239.211	316.389	268.924	−35.118
	500.00	20.785	204.772	196.381	321.343	4.196	218.957	315.612	257.147	−26.864
	600.00	20.792	208.562	198.105	323.422	6.275	198.284	314.795	245.530	−21.375
	700.00	20.806	211.768	199.834	325.501	8.354	177.263	313.929	234.054	−17.465
	800.00	20.883	214.552	201.503	327.586	10.439	155.944	313.006	222.705	−14.541
	900.00	20.929	217.014	203.092	329.677	12.530	134.364	312.017	211.476	−12.274
	1000.00	21.018	219.223	204.597	331.773	14.626	112.550	310.950	200.362	−10.466
	1100.00	21.171	221.233	206.019	333.882	16.735	90.526	309.801	189.358	−8.992
	1200.00	21.384	223.084	207.365	336.010	18.863	68.309	308.564	178.462	−7.768
	1300.00	21.646	224.806	208.641	338.161	21.014	45.913	307.233	167.674	−6.737
	1400.00	21.946	226.421	209.854	340.340	23.193	23.351	305.801	156.991	−5.857
	1500.00	22.272	227.946	211.010	342.551	25.404	0.632	304.260	146.415	−5.099
	1600.00	22.617	229.394	212.114	344.795	27.648	−22.236	302.601	135.946	−4.438
	1700.00	22.972	230.776	213.172	347.075	29.928	−45.245	300.814	125.584	−3.859
	1800.00	23.333	232.099	214.187	349.390	32.243	−68.389	279.008	115.386	−3.348
	1900.00	23.694	233.370	215.163	351.741	34.594	−91.663	277.489	106.338	−2.923
	2000.00	24.051	234.595	216.104	354.128	36.981	−115.061	276.006	97.368	−2.543
	2100.00	24.402	235.777	217.013	356.551	39.404	−138.580	274.559	88.472	−2.201
	2200.00	24.743	236.920	217.892	359.008	41.861	−162.215	273.146	79.644	−1.891
	2300.00	25.073	238.027	218.744	361.499	44.352	−185.963	271.767	70.880	−1.610
	2400.00	25.389	239.101	219.569	364.023	46.876	−209.820	270.420	62.174	−1.353
	2500.00	25.691	240.144	220.372	366.577	49.430	−233.782	269.104	53.525	−1.118
	2600.00	25.976	241.157	221.152	369.160	52.013	−257.848	267.817	44.927	−0.903
	2700.00	26.245	242.142	221.911	371.771	54.624	−282.013	266.558	36.378	−0.704
	2800.00	26.495	243.101	222.651	374.409	57.262	−306.275	265.325	27.876	−0.520
	2900.00	26.727	244.035	223.372	377.070	59.923	−330.632	264.116	19.417	−0.350
	3000.00	26.939	244.945	224.076	379.753	62.606	−355.081	262.929	10.999	−0.192
	3100.00	27.132	245.831	224.764	382.457	65.310	−379.620	261.763	2.621	−0.044
	3200.00	27.304	246.696	225.436	385.179	68.032	−404.247	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1

406.972

ERBIUM BROMIDE (GAS) **ErBr3**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	79.844	403.485	403.485	−546.012	0.000	−666.311	−546.012	−576.421	100.987
	300.00	79.883	403.979	403.486	−545.864	0.148	−667.058	−546.126	−576.609	100.397
	400.00	81.273	427.178	406.640	−537.797	8.215	−708.668	−592.605	−577.230	75.378
	500.00	81.920	445.391	412.634	−529.633	16.379	−752.329	−592.835	−573.359	59.898
	600.00	82.276	460.362	419.378	−521.422	24.590	−797.639	−593.097	−569.440	49.574
	700.00	82.494	473.062	426.163	−513.183	32.829	−844.326	−593.407	−565.474	42.196
	800.00	82.638	484.087	432.730	−504.926	41.086	−892.196	−593.779	−561.459	36.659
	900.00	82.739	493.827	438.988	−496.657	49.355	−941.101	−594.226	−557.393	32.350
	1000.00	82.814	502.549	444.915	−488.379	57.633	−990.927	−594.760	−553.272	28.900
	1100.00	82.872	510.444	450.519	−480.094	65.918	−1041.583	−595.393	−549.094	26.074
	1200.00	82.918	517.657	455.818	−471.805	74.207	−1092.993	−596.137	−544.853	23.717
	1300.00	82.955	524.296	460.833	−463.511	82.501	−1145.095	−597.004	−540.545	21.719
	1400.00	82.987	530.445	465.589	−455.214	90.798	−1197.836	−598.005	−536.165	20.005
	1500.00	83.014	536.171	470.106	−446.914	99.098	−1251.170	−599.152	−531.709	18.516
	1600.00	83.038	541.529	474.404	−438.611	107.401	−1305.058	−600.457	−527.171	17.210
	1700.00	83.059	546.564	478.502	−430.306	115.706	−1359.465	−601.930	−522.546	16.056
	1800.00	83.078	551.312	482.416	−421.999	124.013	−1414.362	−623.464	−517.774	15.025
	1900.00	83.095	555.804	486.162	−413.691	132.321	−1469.719	−624.752	−511.868	14.072
	2000.00	83.111	560.067	489.751	−405.381	140.631	−1525.515	−626.047	−505.893	13.213

References

Phase	H / S	C_p
GAS	Pa2	Pa2

ErCl3 ERBIUM CHLORIDE 273.618

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	98.062	152.716	152.716	−994.537	0.000	−1040.069	−994.537	−918.468	160.912
	300.00	98.129	153.323	152.718	−994.356	0.181	−1040.352	−994.502	−917.996	159.837
	400.00	101.143	181.989	156.606	−984.384	10.153	−1057.179	−992.554	−892.786	116.586
	500.00	103.546	204.823	164.042	−974.146	20.391	−1076.558	−990.528	−868.076	90.687
	600.00	105.707	223.895	172.471	−963.682	30.855	−1098.020	−988.413	−843.783	73.458
	700.00	107.755	240.345	181.019	−953.009	41.528	−1121.250	−986.201	−819.851	61.178
	800.00	109.743	254.864	189.359	−942.133	52.404	−1146.024	−983.891	−796.244	51.989
	900.00	111.695	267.903	197.374	−931.061	63.476	−1172.174	−981.487	−772.931	44.860
	1000.00	113.625	279.771	205.029	−919.795	74.742	−1199.566	−978.996	−749.891	39.170
	1049.00	114.565	285.229	208.649	−914.205	80.332	−1213.409	−977.746	−738.695	36.783
			31.111		32.635					
LIQ	1049.00	141.001	316.339	208.649	−881.570	112.967	−1213.409	−945.111	−738.695	36.783
	1100.00	141.001	323.033	213.798	−874.378	120.159	−1229.715	−942.468	−728.723	34.604
	1200.00	141.001	335.302	223.419	−860.278	134.259	−1262.640	−937.379	−709.517	30.884

References

Phase	H / S	C_p
SOL	Pa2	Pa2
LIQ	Dw2	Dw2

273.618 ERBIUM CHLORIDE (GAS) **ErCl3[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	78.117	376.226	376.226	−674.042	0.000	−786.214	−674.042	−664.612	116.437
	300.00	78.177	376.709	376.227	−673.897	0.145	−786.910	−674.044	−664.554	115.709
	400.00	80.268	399.528	379.324	−665.960	8.082	−825.772	−674.131	−661.378	86.367
	500.00	81.245	417.557	385.231	−657.879	16.163	−866.658	−674.261	−658.176	68.759
	600.00	81.783	432.421	391.894	−649.726	24.316	−909.178	−674.456	−654.942	57.018
	700.00	82.115	445.055	398.609	−641.530	32.512	−953.068	−674.722	−651.669	48.628
	800.00	82.335	456.035	405.116	−633.306	40.736	−998.134	−675.064	−648.354	42.333
	900.00	82.492	465.742	411.323	−625.065	48.977	−1044.233	−675.490	−644.990	37.434
	1000.00	82.609	474.440	417.207	−616.809	57.233	−1091.249	−676.010	−641.574	33.512
	1100.00	82.700	482.318	422.774	−608.544	65.498	−1139.093	−676.633	−638.101	30.301
	1200.00	82.773	489.517	428.040	−600.270	73.772	−1187.690	−677.370	−634.567	27.622
	1300.00	82.833	496.145	433.028	−591.990	82.052	−1236.978	−678.231	−630.966	25.353
	1400.00	82.885	502.285	437.758	−583.704	90.338	−1286.903	−679.228	−627.294	23.405
	1500.00	82.930	508.005	442.253	−575.413	98.629	−1337.421	−680.372	−623.545	21.714
	1600.00	82.969	513.359	446.531	−567.118	106.924	−1388.492	−681.674	−619.715	20.232
	1700.00	83.005	518.390	450.612	−558.819	115.223	−1440.082	−683.146	−615.799	18.921
	1800.00	83.038	523.135	454.510	−550.517	123.525	−1492.160	−704.681	−611.735	17.752
	1900.00	83.068	527.626	458.241	−542.212	131.830	−1544.701	−705.972	−606.536	16.675
	2000.00	83.096	531.887	461.818	−533.903	140.139	−1597.678	−707.271	−601.269	15.704

References

Phase	H / S	C_p
GAS	Pa2	Pa2

381.710 ERBIUM CHLORIDE HEXAHYDRATE **ErCl3*6H2O**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	343.092	398.702	398.702	−2874.408	0.000	−2993.281	−2874.408	−2454.412	430.003
	300.00	343.139	400.824	398.708	−2873.773	0.635	−2994.020	−2874.403	−2451.806	426.897
	400.00	345.405	499.860	412.196	−2839.342	35.066	−3039.286	−2874.345	−2310.961	301.781
	500.00	347.398	577.152	437.738	−2804.701	69.707	−3093.277	−2874.628	−2170.088	226.708
	600.00	349.283	640.657	466.421	−2769.866	104.542	−3154.261	−2875.195	−2029.132	176.652

References

Phase	H / S	C_p
SOL	Nb1	e

ErF3 ERBIUM FLUORIDE 224.255

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	96.231	117.570	117.570	−1693.683	0.000	−1728.737	−1693.683	−1616.224	283.156
	300.00	96.329	118.166	117.572	−1693.505	0.178	−1728.955	−1693.644	−1615.743	281.326
	400.00	100.068	146.448	121.403	−1683.665	10.018	−1742.244	−1691.447	−1590.104	207.646
	500.00	102.379	169.040	128.747	−1673.536	20.147	−1758.056	−1689.219	−1565.027	163.497
	600.00	104.253	187.875	137.075	−1663.203	30.480	−1775.928	−1686.991	−1540.397	134.104
	700.00	106.022	204.078	145.516	−1652.689	40.994	−1795.544	−1684.749	−1516.142	113.136
	800.00	107.826	218.352	153.745	−1641.997	51.686	−1816.679	−1682.473	−1492.210	97.431
	900.00	109.729	231.161	161.648	−1631.121	62.562	−1839.166	−1680.148	−1468.566	85.233
	1000.00	111.765	242.826	169.191	−1620.047	73.636	−1862.874	−1677.759	−1445.185	75.489
	1100.00	113.955	253.580	176.380	−1608.762	84.921	−1887.701	−1675.292	−1422.046	67.527
	1200.00	116.310	263.595	183.235	−1597.251	96.432	−1913.565	−1672.737	−1399.136	60.903
	1300.00	118.838	273.004	189.782	−1585.495	108.188	−1940.400	−1670.083	−1376.442	55.306
	1390.00	121.265	281.038	195.433	−1574.691	118.992	−1965.334	−1667.602	−1356.197	50.964
			21.251		29.539					
SOL−B	1390.00	134.892	302.289	195.433	−1545.152	148.531	−1965.334	−1638.063	−1356.197	50.964
	1400.00	134.892	303.256	196.199	−1543.803	149.880	−1968.362	−1637.646	−1354.171	50.525
	1419.00	134.892	305.075	197.645	−1541.240	152.443	−1974.141	−1636.860	−1350.329	49.707
			19.903		28.242					
LIQ	1419.00	139.118	324.977	197.645	−1512.998	180.685	−1974.141	−1608.618	−1350.329	49.707
	1500.00	139.118	332.700	204.731	−1501.730	191.953	−2000.780	−1604.990	−1335.687	46.513
	1600.00	139.118	341.679	213.013	−1487.818	205.865	−2034.504	−1600.666	−1317.876	43.024
	1700.00	139.118	350.113	220.832	−1473.906	219.777	−2069.098	−1596.523	−1300.329	39.954
	1800.00	139.118	358.065	228.237	−1459.994	233.689	−2104.510	−1612.451	−1282.965	37.231
	1900.00	139.118	365.586	235.270	−1446.082	247.601	−2140.696	−1608.144	−1264.778	34.771
	2000.00	139.118	372.722	241.966	−1432.171	261.512	−2177.615	−1603.851	−1246.817	32.564

References

Phase	H / S	C_p
SOL−A	Pa2	Pa2
SOL−B	Pa2	Pa2
LIQ	Pa2	Pa2

224.255

ERBIUM FLUORIDE (GAS) **ErF3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	71.009	340.110	340.110	−1244.740	0.000	−1346.144	−1244.740	−1233.631	216.127
	300.00	71.115	340.549	340.111	−1244.609	0.131	−1346.773	−1244.747	−1233.562	214.782
	400.00	75.418	361.658	342.960	−1237.261	7.479	−1381.924	−1245.043	−1229.784	160.593
	500.00	77.852	378.773	348.465	−1229.586	15.154	−1418.973	−1245.269	−1225.943	128.073
	600.00	79.322	393.107	354.744	−1221.722	23.018	−1457.586	−1245.510	−1222.056	106.389
	700.00	80.268	405.411	361.124	−1213.739	31.001	−1497.527	−1245.799	−1218.125	90.898
	800.00	80.908	416.173	367.346	−1205.679	39.061	−1538.617	−1246.155	−1214.148	79.276
	900.00	81.361	425.731	373.313	−1197.564	47.176	−1580.721	−1246.591	−1210.122	70.234
	1000.00	81.691	434.321	378.991	−1189.410	55.330	−1623.731	−1247.122	−1206.042	62.997
	1100.00	81.939	442.119	384.381	−1181.228	63.512	−1667.559	−1247.758	−1201.904	57.074
	1200.00	82.129	449.257	389.494	−1173.024	71.716	−1712.133	−1248.510	−1197.703	52.135
	1300.00	82.278	455.837	394.348	−1164.804	79.936	−1757.392	−1249.392	−1193.435	47.953
	1400.00	82.396	461.939	398.960	−1156.570	88.170	−1803.284	−1250.413	−1189.093	44.366
	1500.00	82.491	467.627	403.351	−1148.325	96.415	−1849.766	−1251.585	−1184.673	41.254
	1600.00	82.568	472.953	407.536	−1140.072	104.668	−1896.798	−1252.920	−1180.169	38.529
	1700.00	82.632	477.961	411.533	−1131.812	112.928	−1944.346	−1254.429	−1175.577	36.121
	1800.00	82.684	482.686	415.356	−1123.546	121.194	−1992.381	−1276.003	−1170.836	33.977
	1900.00	82.728	487.157	419.018	−1115.276	129.464	−2040.875	−1277.337	−1164.957	32.027
	2000.00	82.764	491.402	422.532	−1107.001	137.739	−2089.804	−1278.682	−1159.007	30.270

References

Phase	H / S	C_p
GAS	Pa2	Pa2

ErI3[g] ERBIUM IODIDE (GAS) 547.973

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	81.445	431.610	431.610	−339.741	0.000	−468.425	−339.741	−394.666	69.144
	300.00	81.465	432.113	431.611	−339.590	0.151	−469.224	−339.793	−395.006	68.777
	400.00	82.184	455.663	434.817	−331.403	8.338	−513.668	−366.887	−412.126	53.818
	500.00	82.519	474.041	440.891	−323.166	16.575	−560.187	−433.796	−416.960	43.560
	600.00	82.704	489.104	447.709	−314.904	24.837	−608.366	−434.057	−413.569	36.004
	700.00	82.817	501.862	454.557	−306.627	33.114	−657.931	−434.371	−410.131	30.604
	800.00	82.892	512.926	461.177	−298.342	41.399	−708.683	−434.751	−406.643	26.551
	900.00	82.946	522.693	467.480	−290.050	49.691	−760.473	−435.209	−403.103	23.395
	1000.00	82.985	531.434	473.446	−281.753	57.988	−813.187	−435.757	−399.507	20.868
	1100.00	83.016	539.345	479.083	−273.453	66.288	−866.732	−436.407	−395.851	18.797
	1200.00	83.040	546.569	484.410	−265.150	74.591	−921.033	−437.171	−392.132	17.069
	1300.00	83.060	553.217	489.451	−256.845	82.896	−976.027	−438.059	−388.343	15.604
	1400.00	83.077	559.373	494.228	−248.538	91.203	−1031.660	−439.084	−384.481	14.345
	1500.00	83.092	565.105	498.764	−240.230	99.511	−1087.887	−440.257	−380.541	13.252
	1600.00	83.105	570.468	503.080	−231.920	107.821	−1144.669	−441.590	−376.517	12.292
	1700.00	83.116	575.507	507.194	−223.609	116.132	−1201.970	−443.093	−372.405	11.443
	1800.00	83.127	580.258	511.122	−215.297	124.444	−1259.761	−464.660	−368.144	10.683
	1900.00	83.136	584.753	514.880	−206.983	132.758	−1318.013	−465.983	−362.746	9.973
	2000.00	83.145	589.017	518.481	−198.669	141.072	−1376.704	−467.313	−357.278	9.331

References

Phase	H / S	C_p
GAS	Pa2	Pa2

382.518 ERBIUM OXIDE (CUBIC) **Er2O3**

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	108.490	155.645	155.645	–1897.862	0.000	–1944.267	–1897.862	–1808.884	316.909
	300.00	108.700	156.317	155.647	–1897.661	0.201	–1944.556	–1897.847	–1808.332	314.859
	400.00	116.439	188.785	160.021	–1886.356	11.506	–1961.870	–1896.645	–1778.659	232.269
	500.00	120.592	215.252	168.504	–1874.488	23.374	–1982.114	–1895.076	–1749.340	182.752
	600.00	123.334	237.495	178.198	–1862.284	35.578	–2004.781	–1893.403	–1720.349	149.770
	700.00	125.410	256.669	188.070	–1849.843	48.019	–2029.511	–1891.736	–1691.639	126.232
	800.00	127.130	273.530	197.720	–1837.214	60.648	–2056.038	–1890.127	–1663.165	108.594
	900.00	128.644	288.593	206.995	–1824.424	73.438	–2084.157	–1888.605	–1634.887	94.886
	1000.00	130.030	302.219	215.847	–1811.489	86.373	–2113.709	–1887.190	–1606.773	83.929
	1100.00	131.331	314.674	224.273	–1798.420	99.442	–2144.562	–1885.902	–1578.795	74.971
	1200.00	132.576	326.155	232.291	–1785.225	112.637	–2176.611	–1884.758	–1550.927	67.510
	1300.00	133.781	336.815	239.926	–1771.907	125.955	–2209.766	–1883.779	–1523.149	61.201
	1400.00	134.956	346.772	247.206	–1758.469	139.393	–2243.951	–1882.984	–1495.439	55.796
	1500.00	136.110	356.123	254.159	–1744.916	152.946	–2279.100	–1882.395	–1467.780	51.113
	1600.00	137.248	364.943	260.810	–1731.248	166.614	–2315.157	–1882.034	–1440.152	47.016
	1700.00	138.373	373.298	267.183	–1717.467	180.395	–2352.073	–1881.924	–1412.539	43.402
	1800.00	139.487	381.239	273.301	–1703.574	194.288	–2389.803	–1921.847	–1384.814	40.186
	1900.00	140.594	388.810	279.182	–1689.570	208.292	–2428.309	–1921.193	–1354.996	37.251
	2000.00	141.695	396.050	284.846	–1675.455	222.407	–2467.554	–1920.462	–1325.215	34.611

References

Phase	H / S	C_p
SOL	Nb1	Pa1

Eu EUROPIUM 151.965

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	27.656	77.822	77.822	0.000	0.000	–23.203	0.000	0.000	0.000
	300.00	27.656	77.993	77.823	0.051	0.051	–23.347	0.000	0.000	0.000
	400.00	27.949	85.973	78.909	2.825	2.825	–31.564	0.000	0.000	0.000
	500.00	28.953	92.306	80.975	5.666	5.666	–40.487	0.000	0.000	0.000
	600.00	30.292	97.702	83.323	8.627	8.627	–49.994	0.000	0.000	0.000
	700.00	31.464	102.465	85.724	11.719	11.719	–60.007	0.000	0.000	0.000
	800.00	32.970	106.753	88.089	14.931	14.931	–70.471	0.000	0.000	0.000
	900.00	35.313	110.766	90.387	18.341	18.341	–81.349	0.000	0.000	0.000
	1000.00	38.032	114.625	92.619	22.006	22.006	–92.619	0.000	0.000	0.000
	1090.00	40.919	118.020	94.577	25.553	25.553	–103.088	0.000	0.000	0.000
			8.452		9.213					
LIQ	1090.00	38.116	126.472	94.577	34.766	34.766	–103.088	0.000	0.000	0.000
	1100.00	38.116	126.820	94.868	35.147	35.147	–104.355	0.000	0.000	0.000
	1200.00	38.116	130.137	97.671	38.959	38.959	–117.205	0.000	0.000	0.000
	1300.00	38.116	133.188	100.287	42.771	42.771	–130.373	0.000	0.000	0.000
	1400.00	38.116	136.013	102.739	46.582	46.582	–143.835	0.000	0.000	0.000
	1500.00	38.116	138.642	105.046	50.394	50.394	–157.569	0.000	0.000	0.000
	1600.00	38.116	141.102	107.224	54.206	54.206	–171.558	0.000	0.000	0.000
	1700.00	38.116	143.413	109.285	58.017	58.017	–185.785	0.000	0.000	0.000
	1798.00	38.116	145.549	111.204	61.753	61.753	–199.945	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks	
SOL	Pa1	Pa1		
LIQ	Pa1	Pa1	Pa1	BPT= 1798., L= 144.7 kJ

151.965

EUROPIUM (GAS) **Eu**[g]

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	20.786	188.716	188.716	175.310	0.000	119.044	175.310	142.247	–24.921
	300.00	20.786	188.844	188.716	175.348	0.038	118.695	175.297	142.042	–24.732
	400.00	20.786	194.824	189.532	177.427	2.117	99.497	174.602	131.061	–17.115
	500.00	20.786	199.462	191.071	179.506	4.196	79.774	173.840	120.262	–12.564
	600.00	20.786	203.252	192.795	181.584	6.274	59.633	172.957	109.627	–9.544
	700.00	20.786	206.456	194.524	183.663	8.353	39.143	171.944	99.150	–7.399
	800.00	20.786	209.232	196.193	185.742	10.432	18.356	170.810	88.827	–5.800
	900.00	20.786	211.680	197.780	187.820	12.510	–2.692	169.479	78.656	–4.565
	1000.00	20.786	213.870	199.282	189.899	14.589	–23.972	167.893	68.648	–3.586
	1100.00	20.786	215.851	200.699	191.977	16.667	–45.459	156.830	58.896	–2.797
	1200.00	20.786	217.660	202.038	194.056	18.746	–67.136	155.097	50.069	–2.179
	1300.00	20.790	219.324	203.305	196.135	20.825	–88.986	153.364	41.387	–1.663
	1400.00	20.800	220.865	204.505	198.214	22.904	–110.997	151.632	32.838	–1.225
	1500.00	20.819	222.301	205.644	200.295	24.985	–133.156	149.901	24.414	–0.850
	1600.00	20.853	223.645	206.727	202.378	27.068	–155.454	148.173	16.104	–0.526
	1700.00	20.909	224.911	207.760	204.466	29.156	–177.882	146.449	7.903	–0.243
	1800.00	20.998	226.108	208.747	206.561	31.251	–200.434	0.000	0.000	0.000
	1900.00	21.130	227.247	209.691	208.667	33.357	–223.102	0.000	0.000	0.000
	2000.00	21.317	228.335	210.596	210.789	35.479	–245.882	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Pa1,e	Pa1

EuBr2 EUROPIUM DIBROMIDE 311.773

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[	kJ / mol	]			[−]
SOL	298.15	82.394	136.817	136.817	−719.648	0.000	−760.440	−719.648	−691.856	121.210
	300.00	82.425	137.327	136.818	−719.496	0.152	−760.694	−719.687	−691.683	120.433
	400.00	84.098	161.268	140.071	−711.169	8.479	−775.677	−748.617	−676.296	88.315
	500.00	85.772	180.214	146.269	−702.676	16.972	−792.783	−746.656	−658.442	68.787
	600.00	87.446	196.000	153.278	−694.015	25.633	−811.615	−744.675	−640.986	55.803
	700.00	89.119	209.605	160.375	−685.187	34.461	−831.910	−742.673	−623.862	46.553
	800.00	90.793	221.615	167.294	−676.191	43.457	−853.483	−740.638	−607.028	39.635
	900.00	92.466	232.405	173.939	−667.028	52.620	−876.193	−738.642	−590.447	34.269
	956.00	93.404	238.015	177.529	−661.824	57.824	−889.366	−737.564	−581.259	31.759
			26.303		25.146					
LIQ	956.00	108.784	264.318	177.529	−636.678	82.970	−889.366	−712.418	−581.259	31.759
	1000.00	108.784	269.213	181.456	−631.891	87.757	−901.104	−710.935	−575.256	30.048
	1100.00	108.784	279.581	189.913	−621.013	98.635	−928.552	−716.972	−561.759	26.676
	1200.00	108.784	289.047	197.785	−610.135	109.513	−956.991	−713.685	−547.794	23.845
	1300.00	108.784	297.754	205.145	−599.256	120.392	−986.336	−710.404	−534.103	21.461
	1400.00	108.784	305.816	212.051	−588.378	131.270	−1016.520	−707.128	−520.664	19.426
	1500.00	108.784	313.321	218.555	−577.499	142.149	−1047.481	−703.859	−507.459	17.671

References

Phase	H / S	C_p
SOL	Pa2	Pa2
LIQ	Pa2	Pa2

EuBr2[g] EUROPIUM DIBROMIDE (GAS) 311.773

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[	kJ / mol	]			[−]
GAS	298.15	60.666	337.340	337.340	−372.376	0.000	−472.954	−372.376	−404.370	70.844
	300.00	60.680	337.715	337.341	−372.264	0.112	−473.578	−372.455	−404.568	70.442
	400.00	61.256	355.258	339.729	−366.164	6.212	−508.268	−403.612	−408.887	53.395
	500.00	61.636	368.970	344.255	−360.019	12.357	−544.504	−403.999	−410.163	42.849
	600.00	61.939	380.235	349.341	−353.840	18.536	−581.981	−404.499	−411.351	35.811
	700.00	62.206	389.803	354.455	−347.632	24.744	−620.495	−405.119	−412.446	30.777
	800.00	62.454	398.126	359.405	−341.399	30.977	−659.900	−405.846	−413.445	26.995
	900.00	62.690	405.496	364.125	−335.142	37.234	−700.088	−406.756	−414.342	24.048
	1000.00	62.919	412.113	368.598	−328.861	43.515	−740.974	−407.905	−415.126	21.684
	1100.00	63.144	418.120	372.831	−322.558	49.818	−782.490	−418.517	−415.697	19.740
	1200.00	63.366	423.624	376.838	−316.232	56.144	−824.581	−419.783	−415.385	18.081
	1300.00	63.585	428.705	380.635	−309.885	62.491	−867.201	−421.032	−414.967	16.674
	1400.00	63.803	433.425	384.239	−303.515	68.861	−910.310	−422.266	−414.455	15.463
	1500.00	64.020	437.834	387.667	−297.124	75.252	−953.876	−423.484	−413.854	14.412

References

Phase	H / S	C_p
GAS	Pa2	Pa2

391.677

EUROPIUM BROMIDE

EuBr3

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	110.627	182.841	182.841	−753.120	0.000	−807.634	−753.120	−716.359	125.503
	300.00	110.695	183.525	182.843	−752.915	0.205	−807.973	−753.176	−716.131	124.689
	400.00	113.935	215.830	187.226	−741.678	11.442	−828.010	−796.437	−694.722	90.721
	500.00	116.749	241.561	195.605	−730.142	22.978	−850.922	−793.279	−669.656	69.958
	600.00	119.394	263.082	205.105	−718.334	34.786	−876.183	−790.010	−645.237	56.173
	700.00	121.959	281.680	214.746	−706.266	46.854	−903.442	−786.636	−621.373	46.367

References

Phase	H / S	C_p	Remarks
SOL	Pa2	Pa2	Pa2 NDPT= 667. (to EuBr2(SOL) + Br2(GAS))

258.323

EUROPIUM CHLORIDE

EuCl3

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	107.013	144.055	144.055	−935.961	0.000	−978.911	−935.961	−855.925	149.954
	300.00	107.106	144.717	144.057	−935.763	0.198	−979.178	−935.908	−855.429	148.943
	400.00	111.282	176.134	148.312	−924.832	11.129	−995.286	−932.953	−829.042	108.262
	500.00	114.616	201.333	156.478	−913.533	22.428	−1014.200	−929.850	−803.421	83.933
	600.00	117.620	222.499	165.763	−901.920	34.041	−1035.419	−926.651	−778.434	67.769
	700.00	120.468	240.845	175.207	−890.015	45.946	−1058.606	−923.352	−753.991	56.263
	800.00	123.232	257.113	184.448	−877.829	58.132	−1083.519	−919.937	−730.028	47.666
	897.00	125.866	271.364	193.088	−865.748	70.213	−1109.161	−916.580	−707.197	41.182
			56.906		51.045					
LIQ	897.00	142.256	328.270	193.088	−814.703	121.258	−1109.161	−865.535	−707.197	41.182
	900.00	142.256	328.745	193.539	−814.276	121.685	−1110.146	−865.382	−706.668	41.014
	1000.00	142.256	343.733	207.823	−800.050	135.911	−1143.784	−860.433	−689.301	36.005
	1100.00	142.256	357.292	220.804	−785.825	150.136	−1178.846	−864.980	−672.331	31.926
	1200.00	142.256	369.670	232.701	−771.599	164.362	−1215.203	−860.212	−655.028	28.513
	1300.00	142.256	381.056	243.681	−757.373	178.588	−1252.747	−855.458	−638.122	25.640

References

Phase	H / S	C_p
SOL	Pa2	Pa2
LIQ	Pa2	Pa2

EuCl3[g] EUROPIUM CHLORIDE (GAS) 258.323

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	87.986	363.674	363.674	−658.143	0.000	−766.572	−658.143	−643.586	112.754
	300.00	88.044	364.218	363.676	−657.980	0.163	−767.246	−658.126	−643.496	112.043
	400.00	90.073	389.866	367.159	−649.060	9.083	−805.006	−657.181	−638.763	83.414
	500.00	91.141	410.089	373.794	−639.995	18.148	−845.040	−656.312	−634.261	66.261
	600.00	91.864	426.773	381.274	−630.843	27.300	−886.907	−655.575	−629.922	54.840
	700.00	92.382	440.975	388.813	−621.629	36.514	−930.312	−654.967	−625.697	46.690
	800.00	92.742	453.336	396.123	−612.372	45.771	−975.041	−654.480	−621.550	40.583
	900.00	92.965	464.274	403.099	−603.086	55.057	−1020.932	−654.192	−617.454	35.836
	1000.00	93.065	474.075	409.715	−593.783	64.360	−1067.858	−654.166	−613.375	32.039
	1100.00	93.058	482.945	415.976	−584.476	73.667	−1115.716	−663.632	−609.201	28.929
	1200.00	92.955	491.039	421.899	−575.175	82.968	−1164.421	−663.788	−604.246	26.302
	1300.00	92.770	498.472	427.507	−565.888	92.255	−1213.902	−663.972	−599.277	24.079
	1400.00	92.515	505.338	432.824	−556.623	101.520	−1264.097	−664.191	−594.293	22.173
	1500.00	92.205	511.711	437.873	−547.387	110.756	−1314.953	−664.449	−589.291	20.521
	1600.00	91.853	517.651	442.676	−538.183	119.960	−1366.425	−664.751	−584.271	19.074
	1700.00	91.472	523.208	447.252	−529.017	129.126	−1418.471	−665.101	−579.231	17.798
	1800.00	91.076	528.425	451.618	−519.890	138.253	−1471.055	−810.233	−573.971	16.656
	1900.00	90.679	533.339	455.791	−510.802	147.341	−1524.146	−808.978	−560.879	15.420
	2000.00	90.294	537.980	459.785	−501.753	156.390	−1577.714	−807.789	−547.853	14.308

References

Phase	H / S	C_p
GAS	Pa2	Pa2

EuCl3*6H2O EUROPIUM CHLORIDE HEXAHYDRATE 366.415

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	366.909	407.103	407.103	−2784.900	0.000	−2906.278	−2784.900	−2366.025	414.518
	300.00	366.958	409.373	407.110	−2784.221	0.679	−2907.033	−2784.850	−2363.426	411.509
	400.00	369.573	515.298	421.535	−2747.395	37.505	−2953.514	−2782.347	−2223.338	290.338
	500.00	372.188	598.047	448.860	−2710.307	74.593	−3009.330	−2780.168	−2083.845	217.698
	600.00	374.803	666.136	479.564	−2672.957	111.943	−3072.639	−2778.286	−1944.761	169.307

References

Phase	H / S	C_p
SOL	Nb1	e

208.960

EUROPIUM FLUORIDE **EuF3**

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL–A	298.15	99.576	107.110	107.110	–1584.062	0.000	–1615.997	–1584.062	–1502.099	263.162
	300.00	99.675	107.727	107.112	–1583.878	0.184	–1616.196	–1584.016	–1501.591	261.450
	400.00	104.297	137.063	111.081	–1573.669	10.393	–1628.494	–1581.402	–1474.505	192.551
	500.00	108.180	160.761	118.721	–1563.042	21.020	–1643.422	–1578.660	–1448.096	151.282
	600.00	111.772	180.805	127.439	–1552.043	32.019	–1660.526	–1575.832	–1422.247	123.818
	700.00	115.228	198.295	136.338	–1540.692	43.370	–1679.499	–1572.897	–1396.880	104.236
	800.00	118.610	213.903	145.075	–1529.000	55.062	–1700.122	–1569.827	–1371.943	89.579
	900.00	121.949	228.066	153.521	–1516.971	67.091	–1722.231	–1566.680	–1347.396	78.201
	920.00	122.614	230.754	155.171	–1514.526	69.536	–1726.820	–1566.046	–1342.530	76.225
			6.959		6.402					
SOL–B	920.00	150.624	237.713	155.171	–1508.124	75.938	–1726.820	–1559.644	–1342.530	76.225
	1000.00	150.624	250.272	162.284	–1496.074	87.988	–1746.346	–1554.967	–1323.849	69.151
	1100.00	150.624	264.628	170.946	–1481.011	103.051	–1772.102	–1558.607	–1300.924	61.776
	1200.00	150.624	277.734	179.307	–1465.949	118.113	–1799.230	–1552.948	–1277.749	55.619
	1300.00	150.624	289.790	187.348	–1450.887	133.175	–1827.614	–1547.317	–1255.044	50.428
	1400.00	150.624	300.953	195.069	–1435.824	148.238	–1857.158	–1541.711	–1232.772	45.995
	1500.00	150.624	311.345	202.478	–1420.762	163.300	–1887.779	–1536.125	–1210.900	42.167

References

Phase	H / S	C_p
SOL–A	Pa2	Pa2
SOL–B	Pa2	Pa2

EuF3[g] EUROPIUM FLUORIDE (GAS) 208.960

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	81.508	328.382	328.382	−1147.671	0.000	−1245.578	−1147.671	−1131.680	198.266
	300.00	81.614	328.886	328.383	−1147.520	0.151	−1246.186	−1147.658	−1131.581	197.026
	400.00	85.746	352.994	331.642	−1139.130	8.541	−1280.328	−1146.863	−1126.338	147.085
	500.00	88.121	372.404	337.917	−1130.427	17.244	−1316.630	−1146.045	−1121.303	117.142
	600.00	89.662	388.616	345.053	−1121.533	26.138	−1354.703	−1145.322	−1116.424	97.193
	700.00	90.716	402.521	352.293	−1112.511	35.160	−1394.276	−1144.717	−1111.657	82.953
	800.00	91.441	414.685	359.348	−1103.401	44.270	−1435.149	−1144.228	−1106.970	72.278
	900.00	91.923	425.485	366.108	−1094.231	53.440	−1477.168	−1143.939	−1102.332	63.978
	1000.00	92.214	435.187	372.539	−1085.023	62.648	−1520.210	−1143.916	−1097.713	57.339
	1100.00	92.350	443.984	378.640	−1075.793	71.878	−1564.175	−1153.388	−1092.997	51.902
	1200.00	92.357	452.020	384.425	−1066.557	81.114	−1608.981	−1153.556	−1087.500	47.338
	1300.00	92.258	459.409	389.913	−1057.325	90.346	−1654.558	−1153.756	−1081.988	43.475
	1400.00	92.073	466.240	395.124	−1048.108	99.563	−1700.844	−1153.995	−1076.458	40.163
	1500.00	91.819	472.584	400.079	−1038.913	108.758	−1747.789	−1154.277	−1070.910	37.292
	1600.00	91.513	478.501	404.798	−1029.746	117.925	−1795.347	−1154.606	−1065.342	34.780
	1700.00	91.171	484.038	409.298	−1020.612	127.059	−1843.477	−1154.986	−1059.752	32.562
	1800.00	90.807	489.239	413.596	−1011.513	136.158	−1892.144	−1300.150	−1053.940	30.585
	1900.00	90.437	494.139	417.707	−1002.451	145.220	−1941.315	−1298.928	−1040.295	28.600
	2000.00	90.075	498.769	421.646	−993.425	154.246	−1990.962	−1297.773	−1026.713	26.815

References

Phase	H / S	C_p
GAS	Pa2	Pa2

Eu2O3 EUROPIUM OXIDE (CUBIC) 351.928

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−C	298.15	124.682	140.164	140.164	−1662.722	0.000	−1704.512	−1662.722	−1566.360	274.420
	300.00	124.891	140.936	140.166	−1662.491	0.231	−1704.772	−1662.675	−1565.762	272.623
	400.00	132.865	178.083	145.177	−1649.560	13.162	−1720.793	−1659.749	−1533.881	200.304
	500.00	137.552	208.269	154.872	−1636.023	26.699	−1740.158	−1656.481	−1502.790	156.995
	600.00	140.947	233.661	165.943	−1622.091	40.631	−1762.288	−1653.212	−1472.360	128.180
	700.00	143.730	255.603	177.219	−1607.854	54.868	−1786.776	−1650.039	−1442.470	107.638
	800.00	146.188	274.958	188.250	−1593.356	69.366	−1813.322	−1646.972	−1413.029	92.261
	900.00	148.457	292.309	198.865	−1578.622	84.100	−1841.701	−1644.165	−1383.958	80.323
	1000.00	150.608	308.063	209.009	−1563.668	99.054	−1871.731	−1641.734	−1355.180	70.787
	1100.00	152.683	322.515	218.680	−1548.503	114.219	−1903.270	−1658.116	−1326.456	62.988
	1200.00	154.705	335.887	227.897	−1533.134	129.588	−1936.198	−1655.693	−1296.411	56.431
	1300.00	156.690	348.349	236.688	−1517.564	145.158	−1970.417	−1653.121	−1266.574	50.892
	1350.00	157.672	354.281	240.934	−1509.705	153.017	−1987.983	−1651.778	−1251.733	48.432

References

Phase	H / S	C_p	Remarks
SOL−C	Fi3/Pa1	Pa1	TPT (cubic − monoclinic): uncertain

351.928

EUROPIUM OXIDE (MONOCLINIC) **Eu2O3**[M]

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[	J / (K mol)	]	[	kJ / mol	]			
SOL-M1	298.15	121.754	146.022	146.022	–1651.425	0.000	–1694.961	–1651.425	–1556.809	272.746
	300.00	121.938	146.775	146.024	–1651.200	0.225	–1695.232	–1651.383	–1556.222	270.962
	400.00	129.314	182.965	150.908	–1638.602	12.823	–1711.788	–1648.791	–1524.877	199.128
	500.00	134.081	212.361	160.351	–1625.420	26.005	–1731.600	–1645.878	–1494.232	156.101
	600.00	137.822	237.147	171.138	–1611.819	39.606	–1754.108	–1642.940	–1464.180	127.468
	700.00	141.079	258.642	182.136	–1597.871	53.554	–1778.921	–1640.056	–1434.615	107.052
	800.00	144.077	277.678	192.912	–1583.612	67.813	–1805.754	–1637.228	–1405.461	91.767
	895.00	146.785	293.995	202.789	–1569.795	81.630	–1832.921	–1634.728	–1378.084	80.429
			0.608		0.544					
SOL-M2	895.00	143.511	294.603	202.789	–1569.251	82.174	–1832.921	–1634.184	–1378.084	80.429
	900.00	143.702	295.403	203.301	–1568.533	82.892	–1834.396	–1634.076	–1376.653	79.899
	1000.00	147.010	310.723	213.288	–1553.990	97.435	–1864.713	–1632.055	–1348.162	70.421
	1100.00	149.574	324.859	222.796	–1539.156	112.269	–1896.501	–1648.769	–1319.688	62.667
	1200.00	151.632	337.965	231.854	–1524.092	127.333	–1929.650	–1646.652	–1289.863	56.146
	1300.00	153.332	350.171	240.492	–1508.841	142.584	–1964.064	–1644.399	–1260.222	50.636
	1400.00	154.773	361.589	248.738	–1493.434	157.991	–1999.658	–1642.035	–1230.758	45.920
	1500.00	156.022	372.310	256.622	–1477.893	173.532	–2036.359	–1639.579	–1201.466	41.839
	1600.00	157.125	382.416	264.172	–1462.235	189.190	–2074.100	–1637.044	–1172.341	38.273
	1700.00	158.116	391.972	271.411	–1446.472	204.953	–2112.823	–1634.442	–1143.376	35.132
	1800.00	159.019	401.035	278.363	–1430.614	220.811	–2152.478	–1921.247	–1114.171	32.332
	1900.00	159.852	409.655	285.048	–1414.670	236.755	–2193.016	–1915.124	–1069.500	29.403
	2000.00	160.628	417.875	291.485	–1398.646	252.779	–2234.395	–1908.987	–1025.153	26.774

References

Phase	H / S	C_p
SOL–M1	Fi3/Nb1	Pa1
SOL–M2	Pa1	Pa1

EuS EUROPIUM MONOSULFIDE 184.031

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	46.025	77.404	77.404	−418.400	0.000	−441.478	−418.400	−408.718	71.606
	300.00	46.041	77.689	77.405	−418.315	0.085	−441.621	−418.408	−408.658	71.154
	400.00	46.902	91.052	79.221	−413.668	4.732	−450.088	−421.116	−405.247	52.920
	500.00	47.762	101.610	82.679	−408.934	9.466	−459.740	−423.126	−401.071	41.900
	600.00	48.623	110.394	86.586	−404.115	14.285	−470.352	−424.844	−396.491	34.518
	700.00	49.484	117.954	90.540	−399.210	19.190	−481.778	−426.340	−391.647	29.225
	800.00	50.344	124.618	94.391	−394.218	24.182	−493.913	−427.921	−386.585	25.241
	900.00	51.205	130.597	98.087	−389.141	29.259	−506.679	−482.459	−380.162	22.064
	1000.00	52.066	136.037	101.614	−383.977	34.423	−520.014	−482.796	−368.779	19.263
	1100.00	52.926	141.040	104.974	−378.728	39.672	−533.872	−492.530	−357.269	16.965
	1200.00	53.787	145.682	108.175	−373.392	45.008	−548.210	−492.855	−344.957	15.016
	1300.00	54.648	150.021	111.229	−367.970	50.430	−562.998	−493.098	−332.622	13.365
	1400.00	55.508	154.102	114.147	−362.463	55.937	−578.206	−493.261	−320.271	11.949
	1500.00	56.369	157.961	116.941	−356.869	61.531	−593.811	−493.343	−307.911	10.722
	1600.00	57.230	161.627	119.620	−351.189	67.211	−609.792	−493.343	−295.549	9.649
	1700.00	58.090	165.122	122.194	−345.423	72.977	−626.131	−493.261	−283.189	8.701
	1800.00	58.951	168.467	124.673	−339.571	78.829	−642.811	−637.830	−270.638	7.854
	1900.00	59.812	171.677	127.063	−333.633	84.767	−659.820	−635.878	−250.292	6.881
	2000.00	60.672	174.767	129.371	−327.609	90.791	−677.143	−633.860	−230.050	6.008
	2100.00	61.533	177.748	131.604	−321.498	96.902	−694.769	−631.782	−209.910	5.221
	2200.00	62.393	180.631	133.768	−315.302	103.098	−712.689	−629.652	−189.870	4.508
	2300.00	63.254	183.423	135.866	−309.020	109.380	−730.892	−627.477	−169.929	3.859
	2400.00	64.115	186.133	137.905	−302.651	115.749	−749.371	−625.270	−150.083	3.266

References

Phase	H / S	C_p
SOL	Mi1	e

184.031

EUROPIUM MONOSULFIDE (GAS) **EuS**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	35.155	272.069	272.069	88.282	0.000	7.165	88.282	39.925	−6.995
	300.00	35.181	272.287	272.070	88.347	0.065	6.661	88.254	39.625	−6.899
	400.00	36.116	282.555	273.464	91.919	3.637	−21.103	84.470	23.738	−3.100
	500.00	36.552	290.666	276.122	95.554	7.272	−49.779	81.363	8.890	−0.929
	600.00	36.793	297.354	279.119	99.223	10.941	−79.190	78.494	−5.329	0.464
	700.00	36.941	303.037	282.140	102.910	14.628	−109.216	75.780	−19.085	1.424
	800.00	37.039	307.977	285.068	106.609	18.327	−139.772	72.907	−32.445	2.118
	900.00	37.109	312.344	287.861	110.317	22.035	−170.793	16.998	−44.276	2.570
	1000.00	37.161	316.256	290.508	114.030	25.748	−202.226	15.212	−50.991	2.663
	1100.00	37.201	319.800	293.012	117.749	29.467	−234.032	3.946	−57.429	2.727
	1200.00	37.234	323.039	295.382	121.470	33.188	−266.176	2.008	−62.923	2.739
	1300.00	37.261	326.020	297.625	125.195	36.913	−298.631	0.067	−68.255	2.743
	1400.00	37.283	328.782	299.753	128.922	40.640	−331.373	−1.876	−73.438	2.740
	1500.00	37.303	331.355	301.775	132.652	44.370	−364.381	−3.822	−78.481	2.733
	1600.00	37.321	333.763	303.700	136.383	48.101	−397.638	−5.771	−83.395	2.723
	1700.00	37.336	336.026	305.536	140.116	51.834	−431.129	−7.722	−88.187	2.710
	1800.00	37.351	338.161	307.290	143.850	55.568	−464.839	−154.409	−92.666	2.689
	1900.00	37.364	340.181	308.968	147.586	59.304	−498.757	−154.659	−89.229	2.453
	2000.00	37.377	342.097	310.577	151.323	63.041	−532.872	−154.929	−85.779	2.240

References

Phase	H / S	C_p
GAS	Mi1	Mi1

F[g] FLUORINE (GAS) 18.998

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	22.740	158.754	158.754	78.910	0.000	31.577	78.910	61.809	−10.829
	300.00	22.742	158.895	158.755	78.952	0.042	31.284	78.923	61.703	−10.743
	400.00	22.468	165.409	159.645	81.216	2.306	15.052	79.580	55.861	−7.295
	500.00	22.099	170.382	161.315	83.444	4.534	−1.747	80.126	49.866	−5.209
	600.00	21.815	174.385	163.170	85.639	6.729	−18.992	80.585	43.769	−3.810
	700.00	21.609	177.731	165.018	87.809	8.899	−36.603	80.980	37.601	−2.806
	800.00	21.459	180.606	166.791	89.962	11.052	−54.523	81.330	31.380	−2.049
	900.00	21.347	183.127	168.469	92.102	13.192	−72.712	81.646	25.117	−1.458
	1000.00	21.261	185.372	170.049	94.233	15.323	−91.139	81.937	18.820	−0.983
	1100.00	21.194	187.395	171.535	96.355	17.445	−109.779	82.206	12.495	−0.593
	1200.00	21.141	189.236	172.935	98.472	19.562	−128.612	82.458	6.147	−0.268
	1300.00	21.097	190.927	174.255	100.584	21.674	−147.621	82.697	−0.222	0.009
	1400.00	21.061	192.489	175.502	102.691	23.781	−166.793	82.923	−6.609	0.247
	1500.00	21.031	193.941	176.684	104.796	25.886	−186.115	83.140	−13.012	0.453
	1600.00	21.006	195.297	177.805	106.898	27.988	−205.578	83.346	−19.429	0.634
	1700.00	20.984	196.570	178.872	108.997	30.087	−225.172	83.545	−25.859	0.795
	1800.00	20.965	197.769	179.889	111.095	32.185	−244.890	83.736	−32.300	0.937
	1900.00	20.948	198.902	180.860	113.190	34.280	−264.724	83.920	−38.751	1.065
	2000.00	20.933	199.976	181.789	115.284	36.374	−284.668	84.098	−45.212	1.181
	2100.00	20.920	200.997	182.680	117.377	38.467	−304.717	84.270	−51.682	1.286
	2200.00	20.908	201.970	183.535	119.469	40.559	−324.866	84.436	−58.160	1.381
	2300.00	20.897	202.899	184.356	121.559	42.649	−345.110	84.597	−64.645	1.468
	2400.00	20.887	203.789	185.148	123.648	44.738	−365.445	84.752	−71.137	1.548
	2500.00	20.878	204.641	185.911	125.736	46.826	−385.866	84.903	−77.636	1.622
	2600.00	20.870	205.460	186.647	127.824	48.914	−406.372	85.049	−84.140	1.690
	2700.00	20.862	206.247	187.358	129.910	51.000	−426.957	85.190	−90.650	1.754
	2800.00	20.855	207.006	188.046	131.996	53.086	−447.620	85.326	−97.165	1.813
	2900.00	20.848	207.737	188.713	134.081	55.171	−468.357	85.458	−103.685	1.868
	3000.00	20.841	208.444	189.359	136.166	57.256	−489.167	85.586	−110.209	1.919

References

Phase	H / S	C_p
GAS	Ja1	Ja1

37.997

FLUORINE (GAS)

F2[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	31.309	202.795	202.795	0.000	0.000	−60.463	0.000	0.000	0.000
	300.00	31.335	202.989	202.796	0.058	0.058	−60.839	0.000	0.000	0.000
	400.00	32.943	212.222	204.044	3.272	3.272	−81.617	0.000	0.000	0.000
	500.00	34.246	219.722	206.452	6.635	6.635	−103.226	0.000	0.000	0.000
	600.00	35.160	226.051	209.205	10.108	10.108	−125.523	0.000	0.000	0.000
	700.00	35.809	231.523	212.011	13.658	13.658	−148.408	0.000	0.000	0.000
	800.00	36.287	236.337	214.757	17.264	17.264	−171.806	0.000	0.000	0.000
	900.00	36.653	240.633	217.398	20.912	20.912	−195.658	0.000	0.000	0.000
	1000.00	36.943	244.510	219.918	24.592	24.592	−219.918	0.000	0.000	0.000
	1100.00	37.180	248.043	222.317	28.298	28.298	−244.549	0.000	0.000	0.000
	1200.00	37.379	251.287	224.598	32.027	32.027	−269.517	0.000	0.000	0.000
	1300.00	37.550	254.285	226.768	35.773	35.773	−294.798	0.000	0.000	0.000
	1400.00	37.701	257.074	228.834	39.536	39.536	−320.367	0.000	0.000	0.000
	1500.00	37.836	259.680	230.804	43.313	43.313	−346.206	0.000	0.000	0.000
	1600.00	37.959	262.126	232.686	47.103	47.103	−372.298	0.000	0.000	0.000
	1700.00	38.072	264.430	234.486	50.904	50.904	−398.627	0.000	0.000	0.000
	1800.00	38.178	266.609	236.211	54.717	54.717	−425.180	0.000	0.000	0.000
	1900.00	38.278	268.676	237.866	58.540	58.540	−451.945	0.000	0.000	0.000
	2000.00	38.372	270.642	239.456	62.372	62.372	−478.912	0.000	0.000	0.000
	2100.00	38.463	272.516	240.986	66.214	66.214	−506.070	0.000	0.000	0.000
	2200.00	38.549	274.308	242.460	70.065	70.065	−533.412	0.000	0.000	0.000
	2300.00	38.633	276.023	243.882	73.924	73.924	−560.929	0.000	0.000	0.000
	2400.00	38.715	277.669	245.256	77.791	77.791	−588.615	0.000	0.000	0.000
	2500.00	38.795	279.251	246.584	81.667	81.667	−616.461	0.000	0.000	0.000
	2600.00	38.872	280.774	247.870	85.550	85.550	−644.463	0.000	0.000	0.000
	2700.00	38.949	282.243	249.116	89.441	89.441	−672.614	0.000	0.000	0.000
	2800.00	39.024	283.661	250.325	93.340	93.340	−700.910	0.000	0.000	0.000
	2900.00	39.097	285.031	251.498	97.246	97.246	−729.345	0.000	0.000	0.000
	3000.00	39.170	286.358	252.638	101.159	101.159	−757.915	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Ja1	Ja1

Fe IRON 55.847

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL–A	298.15	24.978	27.280	27.280	0.000	0.000	–8.133	0.000	0.000	0.000
	300.00	25.039	27.434	27.280	0.046	0.046	–8.184	0.000	0.000	0.000
	400.00	27.365	34.974	28.293	2.672	2.672	–11.317	0.000	0.000	0.000
	500.00	29.699	41.328	30.279	5.524	5.524	–15.140	0.000	0.000	0.000
	600.00	32.063	46.952	32.598	8.613	8.613	–19.559	0.000	0.000	0.000
	700.00	34.592	52.079	35.019	11.942	11.942	–24.513	0.000	0.000	0.000
	800.00	37.943	56.903	37.455	15.558	15.558	–29.964	0.000	0.000	0.000
	900.00	43.089	61.646	39.879	19.590	19.590	–35.891	0.000	0.000	0.000
	1000.00	54.434	66.668	42.302	24.366	24.366	–42.302	0.000	0.000	0.000
	1042.00	83.680	69.213	43.333	26.967	26.967	–45.153	0.000	0.000	0.000
			0.000		0.000					
SOL–B	1042.00	83.680	69.213	43.333	26.967	26.967	–45.153	0.000	0.000	0.000
	1100.00	46.401	71.971	44.775	29.916	29.916	–49.252	0.000	0.000	0.000
	1184.00	41.422	75.202	46.822	33.601	33.601	–55.437	0.000	0.000	0.000
			0.760		0.900					
SOL–C	1184.00	33.890	75.962	46.822	34.501	34.501	–55.437	0.000	0.000	0.000
	1200.00	34.017	76.417	47.214	35.045	35.045	–56.656	0.000	0.000	0.000
	1300.00	34.852	79.173	49.567	38.488	38.488	–64.437	0.000	0.000	0.000
	1400.00	35.691	81.787	51.776	42.015	42.015	–72.486	0.000	0.000	0.000
	1500.00	36.525	84.277	53.860	45.626	45.626	–80.790	0.000	0.000	0.000
	1600.00	37.364	86.661	55.836	49.320	49.320	–89.338	0.000	0.000	0.000
	1665.00	37.907	88.160	57.069	51.766	51.766	–95.020	0.000	0.000	0.000
			0.503		0.837					
SOL–D	1665.00	41.123	88.663	57.069	52.603	52.603	–95.020	0.000	0.000	0.000
	1700.00	41.471	89.522	57.728	54.049	54.049	–98.138	0.000	0.000	0.000
	1800.00	42.464	91.920	59.562	58.246	58.246	–107.211	0.000	0.000	0.000
	1809.00	42.553	92.132	59.723	58.628	58.628	–108.039	0.000	0.000	0.000
			7.632		13.807					
LIQ	1809.00	46.024	99.765	59.723	72.435	72.435	–108.039	0.000	0.000	0.000
	1900.00	46.024	102.024	61.696	76.623	76.623	–117.221	0.000	0.000	0.000
	2000.00	46.024	104.384	63.771	81.226	81.226	–127.543	0.000	0.000	0.000
	2100.00	46.024	106.630	65.759	85.828	85.828	–138.094	0.000	0.000	0.000
	2200.00	46.024	108.771	67.666	90.431	90.431	–148.865	0.000	0.000	0.000
	2300.00	46.024	110.817	69.498	95.033	95.033	–159.845	0.000	0.000	0.000
	2400.00	46.024	112.775	71.261	99.635	99.635	–171.026	0.000	0.000	0.000
	2500.00	46.024	114.654	72.959	104.238	104.238	–182.398	0.000	0.000	0.000
	2600.00	46.024	116.459	74.598	108.840	108.840	–193.954	0.000	0.000	0.000
	2700.00	46.024	118.196	76.181	113.443	113.443	–205.688	0.000	0.000	0.000
	2800.00	46.024	119.870	77.711	118.045	118.045	–217.591	0.000	0.000	0.000
	2900.00	46.024	121.485	79.193	122.647	122.647	–229.660	0.000	0.000	0.000
	3000.00	46.024	123.045	80.629	127.250	127.250	–241.887	0.000	0.000	0.000
	3100.00	46.024	124.555	82.022	131.852	131.852	–254.267	0.000	0.000	0.000
	3132.00	46.024	125.027	82.459	133.325	133.325	–258.260	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks	
SOL–A	Hu1	Hu1		
SOL–B	Hu1	Hu1		
SOL–C	Hu1	Hu1		
SOL–D	Hu1	Hu1		
LIQ	Hu1	Hu1	Hu1	BPT= 3132., L= 349.6 kJ

55.847

IRON (GAS)

Fe[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	25.671	180.486	180.486	415.471	0.000	361.659	415.471	369.793	−64.786
	300.00	25.685	180.645	180.486	415.519	0.048	361.325	415.472	369.509	−64.337
	400.00	25.546	188.045	181.496	418.090	2.619	342.872	415.418	354.190	−46.252
	500.00	24.868	193.674	183.392	420.612	5.141	323.775	415.088	338.914	−35.406
	600.00	24.197	198.148	185.492	423.065	7.594	304.176	414.452	323.734	−28.184
	700.00	23.620	201.833	187.571	425.455	9.984	284.171	413.513	308.685	−23.034
	800.00	23.146	204.955	189.554	427.792	12.321	263.828	412.234	293.792	−19.183
	900.00	22.771	207.659	191.419	430.087	14.616	243.194	410.497	279.085	−16.198
	1000.00	22.488	210.043	193.164	432.349	16.878	222.307	407.983	264.609	−13.822
	1100.00	22.292	212.176	194.797	434.588	19.117	201.194	404.672	250.446	−11.893
	1200.00	22.180	214.110	196.327	436.811	21.340	179.878	401.766	236.535	−10.296
	1300.00	22.149	215.884	197.764	439.026	23.555	158.377	400.539	222.814	−8.953
	1400.00	22.158	217.525	199.118	441.241	25.770	136.706	399.226	209.192	−7.805
	1500.00	22.234	219.056	200.397	443.460	27.989	114.876	397.834	195.666	−6.814
	1600.00	22.363	220.495	201.608	445.690	30.219	92.898	396.370	182.236	−5.949
	1700.00	22.534	221.856	202.760	447.934	32.463	70.780	393.885	168.918	−5.190
	1800.00	22.738	223.149	203.857	450.198	34.727	48.529	391.952	155.740	−4.519
	1900.00	22.969	224.385	204.905	452.483	37.012	26.152	375.859	143.373	−3.942
	2000.00	23.222	225.569	205.909	454.792	39.321	3.654	373.566	131.196	−3.426
	2100.00	23.491	226.709	206.872	457.128	41.657	−18.961	371.299	119.134	−2.963
	2200.00	23.773	227.808	207.799	459.491	44.020	−41.687	369.060	107.179	−2.545
	2300.00	24.066	228.871	208.692	461.883	46.412	−64.521	366.850	95.324	−2.165
	2400.00	24.365	229.902	209.555	464.304	48.833	−87.460	364.669	83.566	−1.819
	2500.00	24.671	230.903	210.389	466.756	51.285	−110.500	362.518	71.897	−1.502
	2600.00	24.980	231.876	211.196	469.238	53.767	−133.640	360.398	60.315	−1.212
	2700.00	25.291	232.825	211.980	471.752	56.281	−156.875	358.309	48.813	−0.944
	2800.00	25.603	233.750	212.741	474.297	58.826	−180.204	356.252	37.388	−0.697
	2900.00	25.916	234.654	213.481	476.873	61.402	−203.624	354.225	26.035	−0.469
	3000.00	26.228	235.538	214.202	479.480	64.009	−227.134	352.230	14.753	−0.257
	3100.00	26.538	236.403	214.904	482.118	66.647	−250.731	350.266	3.536	−0.060
	3200.00	26.846	237.250	215.589	484.787	69.316	−274.414	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1

FeAsO4 — IRON ARSENATE — 194.766

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	117.054	161.544	161.544	−865.335	0.000	−913.499	−865.335	−772.391	135.320
	300.00	117.144	162.269	161.546	−865.118	0.217	−913.799	−865.319	−771.814	134.385
	400.00	121.980	196.631	166.199	−853.162	12.173	−931.815	−864.438	−740.778	96.736
	473.00	125.511	217.366	172.533	−844.129	21.206	−946.943	−863.778	−718.267	79.320
			0.000		0.000					
SOL−B	473.00	134.960	217.366	172.533	−844.129	21.206	−946.943	−863.778	−718.267	79.320
	500.00	136.984	224.914	175.159	−840.457	24.878	−952.915	−863.269	−709.975	74.171
	600.00	144.482	250.552	185.634	−826.384	38.951	−976.715	−861.226	−679.503	59.156
	700.00	151.980	273.387	196.567	−811.561	53.774	−1002.932	−858.919	−649.395	48.458
	800.00	159.477	294.171	207.487	−795.988	69.347	−1031.325	−856.368	−619.635	40.458
	893.00	166.450	312.085	217.458	−780.833	84.502	−1059.525	−853.861	−592.254	34.643
			0.000		0.000					
SOL−C	893.00	156.640	312.085	217.458	−780.833	84.502	−1059.525	−853.861	−592.254	34.643
	900.00	156.908	313.310	218.199	−779.735	85.600	−1061.714	−853.741	−590.204	34.255
	1000.00	160.749	330.040	228.558	−763.852	101.483	−1093.893	−852.367	−561.003	29.304
	1100.00	164.590	345.541	238.496	−747.585	117.750	−1127.681	−851.506	−531.892	25.257
	1200.00	168.431	360.027	248.027	−730.934	134.401	−1162.967	−850.032	−502.919	21.892

References

Phase	H / S	C_p	Remarks	
SOL−A	G1	e	G1	TPT= 473.
SOL−B	u	G1	G1	TPT= 893.
SOL−C	u	G1		

Fe3(AsO4)2 — TRIIRON DIARSENATE — 445.379

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	264.642	339.908	339.908	−1954.974	0.000	−2056.318	−1954.974	−1765.967	309.390
	300.00	265.220	341.547	339.913	−1954.484	0.490	−2056.948	−1954.931	−1764.795	307.278
	400.00	288.394	421.329	350.634	−1926.696	28.278	−2095.228	−1951.919	−1701.837	222.237
	500.00	303.516	487.392	371.569	−1897.062	57.912	−2140.758	−1948.210	−1639.739	171.302
	600.00	315.468	543.818	395.687	−1866.096	88.878	−2192.386	−1944.391	−1578.404	137.412
	700.00	325.925	593.246	420.451	−1834.017	120.957	−2249.290	−1940.675	−1517.702	113.252
	800.00	335.584	637.404	444.858	−1800.937	154.037	−2310.861	−1937.255	−1457.516	95.166
	811.00	336.614	641.994	447.501	−1797.240	157.734	−2317.897	−1936.911	−1450.922	93.451

References

Phase	H / S	C_p
SOL	G1	G1

66.658

IRON MONOBORIDE

FeB

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	50.207	27.698	27.698	−71.128	0.000	−79.386	−71.128	−69.515	12.179
	300.00	50.219	28.009	27.699	−71.035	0.093	−79.438	−71.102	−69.505	12.102
	400.00	50.863	42.544	29.677	−65.981	5.147	−82.999	−70.039	−69.149	9.030
	500.00	51.507	53.963	33.432	−60.862	10.266	−87.844	−69.503	−68.998	7.208
	600.00	52.151	63.411	37.663	−55.680	15.448	−93.726	−69.389	−68.914	5.999
	700.00	52.795	71.498	41.933	−50.432	20.696	−100.481	−69.626	−68.820	5.135
	800.00	53.439	78.590	46.081	−45.121	26.007	−107.993	−70.214	−68.670	4.484
	900.00	54.083	84.922	50.051	−39.744	31.384	−116.174	−71.252	−68.420	3.971
	1000.00	54.727	90.653	53.829	−34.304	36.824	−124.957	−73.050	−68.018	3.553
	1100.00	55.371	95.899	57.418	−28.799	42.329	−134.288	−75.625	−67.377	3.199
	1200.00	56.015	100.745	60.830	−23.230	47.898	−144.124	−77.773	−66.551	2.897
	1300.00	56.658	105.254	64.075	−17.596	53.532	−154.426	−78.224	−65.598	2.636
	1400.00	57.302	109.476	67.169	−11.898	59.230	−165.165	−78.743	−64.608	2.411
	1500.00	57.946	113.452	70.123	−6.136	64.992	−176.313	−79.325	−63.578	2.214
	1600.00	58.590	117.212	72.950	−0.309	70.819	−187.848	−79.969	−62.508	2.041
	1700.00	59.234	120.783	75.659	5.582	76.710	−199.749	−81.622	−61.377	1.886
	1800.00	59.878	124.187	78.262	11.538	82.666	−211.999	−82.718	−60.154	1.746
	1900.00	60.522	127.442	80.765	17.558	88.686	−224.582	−97.967	−58.168	1.599
	1923.00	60.670	128.171	81.328	18.952	90.080	−227.521	−98.303	−57.684	1.567

References

Phase	H / S	C_p	Remarks	
SOL	Ku1	e	Tk1	MPT= 1923.

Fe2B

DIIRON BORIDE

122.505

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	75.328	56.651	56.651	−71.128	0.000	−88.019	−71.128	−70.014	12.266
	300.00	75.354	57.117	56.653	−70.989	0.139	−88.124	−71.102	−70.007	12.189
	400.00	76.735	78.984	59.625	−63.384	7.744	−94.978	−70.115	−69.811	9.116
	500.00	78.115	96.256	65.283	−55.642	15.486	−103.770	−69.807	−69.784	7.290
	600.00	79.496	110.620	71.675	−47.761	23.367	−114.133	−70.083	−69.762	6.073
	700.00	80.877	122.978	78.141	−39.743	31.385	−125.827	−70.878	−69.653	5.198
	800.00	82.257	133.868	84.440	−31.586	39.542	−138.680	−72.237	−69.393	4.531
	900.00	83.638	143.636	90.484	−23.291	47.837	−152.563	−74.388	−68.918	4.000
	1000.00	85.019	152.519	96.250	−14.858	56.270	−167.378	−77.970	−68.137	3.559
	1100.00	86.400	160.687	101.741	−6.287	64.841	−183.043	−83.028	−66.880	3.176
	1200.00	87.780	168.264	106.973	2.422	73.550	−199.495	−87.166	−65.267	2.841
	1300.00	89.161	175.345	111.963	11.269	82.397	−216.680	−87.847	−63.415	2.548
	1400.00	90.542	182.003	116.730	20.254	91.382	−234.550	−88.605	−61.507	2.295
	1500.00	91.922	188.297	121.293	29.377	100.505	−253.068	−89.438	−59.543	2.073
	1600.00	93.303	194.273	125.669	38.638	109.766	−272.199	−90.342	−57.521	1.878
	1662.00	94.159	197.837	128.295	44.450	115.578	−284.355	−90.937	−56.238	1.767

References

Phase	H / S	C_p	Remarks	
SOL	Ku1	e	Tk1	DPT= 1662. (peritec.)

215.655 IRON DIBROMIDE **FeBr2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−1	298.15	80.235	140.666	140.666	−248.948	0.000	−290.888	−248.948	−237.373	41.587
	300.00	80.276	141.163	140.668	−248.800	0.148	−291.148	−248.986	−237.301	41.318
	400.00	82.501	164.561	143.843	−240.661	8.287	−306.485	−277.955	−227.351	29.689
	500.00	84.726	183.210	149.912	−232.299	16.649	−323.904	−276.138	−214.912	22.452
	600.00	86.951	198.854	156.800	−223.715	25.233	−343.028	−274.361	−202.834	17.658
	650.00	88.064	205.858	160.307	−219.340	29.608	−353.148	−273.484	−196.909	15.824
			0.643		0.418					
SOL−2	650.00	88.064	206.501	160.307	−218.922	30.026	−353.148	−273.066	−196.909	15.824
	700.00	89.176	213.068	163.843	−214.491	34.457	−363.638	−272.201	−191.083	14.259
	800.00	91.401	225.121	170.763	−205.462	43.486	−385.559	−270.536	−179.610	11.727
	900.00	93.626	236.015	177.418	−196.211	52.737	−408.624	−269.074	−168.336	9.770
	964.00	95.050	242.495	181.525	−190.173	58.775	−423.938	−268.380	−161.197	8.735
			52.083		50.208					
LIQ	964.00	106.692	294.578	181.525	−139.965	108.983	−423.938	−218.172	−161.197	8.735
	1000.00	106.692	298.489	185.666	−136.124	112.824	−434.614	−217.529	−159.082	8.310
	1100.00	106.692	308.658	196.392	−125.455	123.493	−464.979	−216.182	−153.289	7.279
	1200.00	106.692	317.942	206.140	−114.786	134.162	−496.316	−214.422	−147.668	6.428
	1207.00	106.692	318.562	206.790	−114.039	134.909	−498.544	−214.178	−147.280	6.374

References

Phase	H / S	C_p	Remarks
SOL−1	Ja1	Ja1	
SOL−2	Ja1	Ja1	
LIQ	Ja1	Ja1	Ja1 NBPT= 1207. GAS (FeBr2 + Fe2Br4)

FeBr2[g] IRON DIBROMIDE (GAS) 215.655

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	60.798	337.340	337.340	−41.422	0.000	−142.000	−41.422	−88.485	15.502
	300.00	60.804	337.716	337.341	−41.310	0.112	−142.624	−41.496	−88.777	15.457
	400.00	61.117	355.251	339.730	−35.214	6.208	−177.314	−72.508	−98.180	12.821
	500.00	61.429	368.922	344.251	−29.086	12.336	−213.547	−72.925	−104.555	10.923
	600.00	61.742	380.150	349.326	−22.928	18.494	−251.018	−73.573	−110.824	9.648
	700.00	62.055	389.691	354.428	−16.738	24.684	−289.521	−74.447	−116.966	8.728
	800.00	62.368	397.998	359.366	−10.517	30.905	−328.915	−75.590	−122.966	8.029
	900.00	62.681	405.362	364.075	−4.264	37.158	−369.090	−77.127	−128.801	7.475
	1000.00	62.994	411.982	368.540	2.020	43.442	−409.962	−79.385	−134.431	7.022
	1100.00	63.307	418.001	372.767	8.335	49.757	−451.466	−82.392	−139.776	6.637
	1200.00	63.620	423.523	376.770	14.681	56.103	−493.546	−84.954	−144.898	6.307
	1300.00	63.933	428.627	380.565	21.059	62.481	−536.157	−85.806	−149.859	6.021
	1400.00	64.246	433.377	384.170	27.468	68.890	−579.260	−86.715	−154.753	5.774
	1500.00	64.559	437.820	387.600	33.908	75.330	−622.822	−87.683	−159.579	5.557
	1600.00	64.872	441.996	390.870	40.380	81.802	−666.815	−88.708	−164.339	5.365
	1700.00	65.185	445.939	393.995	46.883	88.305	−711.213	−90.742	−169.014	5.193
	1800.00	65.498	449.673	396.985	53.417	94.839	−755.996	−92.217	−173.577	5.037
	1900.00	65.811	453.223	399.853	59.982	101.404	−801.142	−107.848	−177.353	4.876
	2000.00	66.124	456.607	402.606	66.579	108.001	−846.635	−109.676	−180.964	4.726

References

Phase	H / S	C_p
GAS	Ja1	Ja1

FeBr3 IRON TRIBROMIDE 295.559

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	96.929	173.636	173.636	−268.199	0.000	−319.969	−268.199	−243.763	42.706
	300.00	97.069	174.236	173.638	−268.020	0.179	−320.290	−268.276	−243.611	42.416
	400.00	104.600	203.192	177.535	−257.936	10.263	−339.213	−312.542	−226.171	29.535
	500.00	112.131	227.342	185.143	−247.100	21.099	−360.771	−310.095	−204.852	21.401
	600.00	119.662	248.452	193.970	−235.510	32.689	−384.581	−307.171	−184.070	16.025

References

Phase	H / S	C_p
SOL	Nb1/e	e

431.310

DIIRON TETRABROMIDE (GAS) **Fe2Br4**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	130.892	515.997	515.997	−253.132	0.000	−406.976	−253.132	−299.947	52.549
	300.00	130.902	516.806	515.999	−252.890	0.242	−407.932	−253.262	−300.237	52.276
	400.00	131.377	554.532	521.140	−239.775	13.357	−461.588	−314.364	−303.320	39.610
	500.00	131.792	583.893	530.862	−226.616	26.516	−518.563	−314.293	−300.578	31.401
	600.00	132.183	607.956	541.765	−213.418	39.714	−578.191	−314.708	−297.804	25.926
	700.00	132.563	628.361	552.715	−200.180	52.952	−640.033	−315.599	−294.923	22.007
	800.00	132.937	646.087	563.303	−186.905	66.227	−703.774	−317.052	−291.878	19.058
	900.00	133.308	661.766	573.389	−173.593	79.539	−769.182	−319.319	−288.605	16.750
	1000.00	133.677	675.831	582.942	−160.244	92.888	−836.074	−323.053	−285.011	14.887
	1100.00	134.044	688.588	591.975	−146.857	106.275	−904.305	−328.312	−280.924	13.340
	1200.00	134.410	700.268	600.520	−133.435	119.697	−973.756	−332.706	−276.460	12.034
	1300.00	134.776	711.041	608.612	−119.975	133.157	−1044.328	−333.704	−271.734	10.918
	1400.00	135.141	721.042	616.290	−106.480	146.652	−1115.938	−334.846	−266.925	9.959
	1500.00	135.505	730.378	623.588	−92.947	160.185	−1188.514	−336.129	−262.029	9.125
	1600.00	135.870	739.135	630.539	−79.379	173.753	−1261.995	−337.554	−257.043	8.392
	1700.00	136.234	747.383	637.172	−65.773	187.359	−1336.324	−341.022	−251.927	7.741
	1800.00	136.598	755.180	643.513	−52.132	201.000	−1411.456	−343.400	−246.618	7.157
	1900.00	136.962	762.575	649.587	−38.454	214.678	−1487.347	−374.113	−239.769	6.592
	2000.00	137.326	769.610	655.414	−24.739	228.393	−1563.959	−377.250	−232.617	6.075

References

Phase	H / S	C_p
GAS	Ja1	Ja1

Fe3C — TRIIRON CARBIDE — 179.552

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	105.868	104.600	104.600	25.104	0.000	−6.082	25.104	20.029	−3.509
	300.00	106.023	105.255	104.602	25.300	0.196	−6.277	25.145	19.998	−3.482
	400.00	114.391	136.902	108.861	36.321	11.217	−18.440	27.251	17.960	−2.345
	485.00	121.503	159.607	115.808	46.346	21.242	−31.063	28.934	15.816	−1.703
			14.493		7.029					
SOL−B	485.00	113.282	174.099	115.808	53.375	28.271	−31.063	35.963	15.816	−1.703
	500.00	113.470	177.553	117.609	55.076	29.972	−33.701	36.119	15.191	−1.587
	600.00	114.725	198.352	129.383	66.486	41.382	−52.526	36.684	10.939	−0.952
	700.00	115.980	216.131	140.536	78.021	52.917	−73.271	36.453	6.655	−0.497
	800.00	117.236	231.700	150.978	89.682	64.578	−95.678	35.341	2.462	−0.161
	900.00	118.491	245.581	160.732	101.468	76.364	−119.555	32.999	−1.523	0.088
	1000.00	119.746	258.130	169.854	113.380	88.276	−144.750	28.464	−5.143	0.269
	1100.00	121.001	269.602	178.408	125.417	100.313	−171.145	21.663	−8.132	0.386
	1200.00	122.256	280.184	186.454	137.580	112.476	−198.641	16.193	−10.656	0.464
	1300.00	123.512	290.020	194.047	149.868	124.764	−227.157	15.861	−12.881	0.518
	1400.00	124.767	299.219	201.234	162.282	137.178	−256.624	15.364	−15.074	0.562
	1500.00	126.022	307.870	208.058	174.822	149.718	−286.982	14.712	−17.227	0.600
			34.309		51.463					
LIQ	1500.00	121.336	342.178	208.058	226.285	201.181	−286.982	66.175	−17.227	0.600
	1600.00	121.336	350.009	216.688	238.418	213.314	−321.596	64.841	−22.745	0.743
	1700.00	121.336	357.365	224.749	250.552	225.448	−356.968	60.384	−28.115	0.864
	1800.00	121.336	364.300	232.311	262.686	237.582	−393.055	57.507	−33.239	0.965
	1900.00	121.336	370.861	239.432	274.819	249.715	−429.816	12.073	−36.090	0.992
	2000.00	121.336	377.084	246.160	286.953	261.849	−467.216	7.952	−38.519	1.006

References

Phase	H / S	C_p
SOL−A	Nb1	Ku1,e
SOL−B	Tk1	Ku1
LIQ	Ku1	e

FeCO3 — IRON CARBONATE — 115.856

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	82.082	92.885	92.885	−740.568	0.000	−768.262	−740.568	−666.670	116.798
	300.00	82.289	93.393	92.886	−740.416	0.152	−768.434	−740.560	−666.211	115.998
	400.00	93.499	118.602	96.248	−731.627	8.941	−779.067	−739.890	−641.517	83.774
	500.00	104.709	140.669	102.966	−721.716	18.852	−792.051	−738.751	−617.046	64.462
	600.00	115.919	160.751	110.946	−710.685	29.883	−807.135	−737.127	−592.849	51.612
	700.00	127.128	179.462	119.411	−698.532	42.036	−824.156	−734.964	−568.965	42.457
	800.00	138.338	197.169	128.033	−685.259	55.309	−842.994	−732.237	−545.431	35.613

References

Phase	H / S	C_p
SOL	Nb1	La1

195.899

IRON PENTACARBONYL **Fe(CO)5**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
LIQ	298.15	240.580	337.649	337.649	−763.998	0.000	−864.668	−763.998	−695.066	121.773
	300.00	240.580	339.137	337.653	−763.553	0.445	−865.294	−763.814	−694.638	120.947
	379.39	240.580	395.622	344.105	−744.453	19.545	−894.548	−756.649	−677.235	93.242

References

Phase	H / S	C_p	Remarks
LIQ	Tk1	Tk1	Tk1 BPT= 379.391 L= 34.96 kJ

195.899

IRON PENTACARBONYL (GAS) **Fe(CO)5**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	167.572	444.990	444.990	−723.460	0.000	−856.134	−723.460	−686.531	120.277
	300.00	168.160	446.028	444.993	−723.149	0.311	−856.958	−723.411	−686.302	119.496
	400.00	190.194	497.796	451.902	−705.102	18.358	−904.221	−720.603	−674.352	88.061
	500.00	202.506	541.663	465.585	−685.421	38.039	−956.252	−718.076	−663.095	69.273
	600.00	210.990	579.372	481.481	−664.725	58.735	−1012.348	−716.269	−652.281	56.786
	700.00	217.667	612.414	497.874	−643.282	80.178	−1071.972	−715.182	−641.712	47.885
	800.00	223.381	641.860	514.065	−621.224	102.236	−1134.712	−714.702	−631.255	41.217
	900.00	228.535	668.472	529.766	−598.624	124.836	−1200.249	−714.812	−620.825	36.032
	1000.00	233.342	692.802	544.870	−575.528	147.932	−1268.330	−715.743	−610.341	31.881

References

Phase	H / S	C_p
GAS	Tk1,e	Tk1,La1

FeCl[g] IRON MONOCHLORIDE (GAS) 91.300

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	38.310	257.580	257.580	251.040	0.000	174.242	251.040	215.637	−37.779
	300.00	38.332	257.817	257.581	251.111	0.071	173.766	251.033	215.417	−37.507
	400.00	39.081	268.962	259.096	254.987	3.947	147.402	250.549	203.612	−26.589
	500.00	39.433	277.725	261.976	258.914	7.874	120.052	249.840	191.955	−20.053
	600.00	39.630	284.934	265.220	262.868	11.828	91.908	248.888	180.464	−15.711
	700.00	39.753	291.053	268.484	266.838	15.798	63.101	247.690	169.151	−12.622
	800.00	39.836	296.367	271.644	270.818	19.778	33.724	246.201	158.029	−10.318
	900.00	39.897	301.062	274.657	274.804	23.764	3.848	244.293	147.116	−8.538
	1000.00	39.943	305.268	277.512	278.797	27.757	−26.472	241.638	136.452	−7.128
	1100.00	39.981	309.077	280.211	282.793	31.753	−57.192	238.208	126.113	−5.989
	1200.00	40.012	312.557	282.764	286.792	35.752	−88.276	235.197	116.037	−5.051
	1300.00	40.038	315.761	285.180	290.795	39.755	−119.694	233.869	106.160	−4.266
	1400.00	40.061	318.729	287.472	294.800	43.760	−151.421	232.457	96.389	−3.596
	1500.00	40.082	321.494	289.649	298.807	47.767	−183.433	230.959	86.721	−3.020
	1600.00	40.101	324.081	291.721	302.816	51.776	−215.713	229.375	77.157	−2.519
	1700.00	40.119	326.513	293.697	306.827	55.787	−248.244	226.756	67.712	−2.081
	1800.00	40.135	328.806	295.584	310.840	59.800	−281.011	224.667	58.417	−1.695
	1900.00	40.151	330.977	297.390	314.854	63.814	−314.001	208.395	49.941	−1.373
	2000.00	40.166	333.037	299.122	318.870	67.830	−347.203	205.896	41.666	−1.088

References

Phase	H / S	C_p
GAS	Ja1	Ja1

126.752

IRON DICHLORIDE

FeCl2

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	76.663	117.947	117.947	–341.833	0.000	–376.999	–341.833	–302.343	52.969
	300.00	76.735	118.421	117.948	–341.691	0.142	–377.218	–341.800	–302.098	52.600
	400.00	79.673	140.936	120.998	–333.858	7.975	–390.232	–340.060	–289.128	37.756
	500.00	81.615	158.935	126.845	–325.788	16.045	–405.256	–338.414	–276.588	28.895
	600.00	83.124	173.953	133.479	–317.549	24.284	–421.921	–336.898	–264.368	23.015
	700.00	84.392	186.864	140.205	–309.172	32.661	–439.976	–335.526	–252.391	18.834
	800.00	85.499	198.207	146.760	–300.676	41.157	–459.241	–334.352	–240.597	15.709
	900.00	86.484	208.335	153.049	–292.076	49.757	–479.577	–333.510	–228.933	13.287
	950.00	86.937	213.023	156.083	–287.740	54.093	–490.112	–333.308	–223.129	12.269
			45.276		43.012					
LIQ	950.00	102.173	258.299	156.083	–244.728	97.105	–490.112	–290.296	–223.129	12.269
	1000.00	102.173	263.540	161.326	–239.619	102.214	–503.159	–289.570	–219.615	11.471
	1100.00	102.173	273.278	171.068	–229.402	112.431	–530.008	–288.657	–212.649	10.098
	1200.00	102.173	282.168	179.961	–219.185	122.648	–557.787	–287.332	–205.817	8.959
	1297.00	102.173	290.110	187.906	–209.274	132.559	–585.547	–284.420	–199.343	8.028

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja1	NBPT= 1297., GAS (FeCl2 + Fe2Cl4)

FeCl2[g] IRON DICHLORIDE (GAS) 126.752

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	57.569	299.265	299.265	−141.001	0.000	−230.227	−141.001	−155.571	27.255
	300.00	57.616	299.622	299.266	−140.894	0.107	−230.781	−141.004	−155.662	27.103
	400.00	59.459	316.479	301.552	−135.030	5.971	−261.622	−141.233	−160.518	20.961
	500.00	60.425	329.861	305.922	−129.031	11.970	−293.962	−141.657	−165.295	17.268
	600.00	60.991	340.932	310.861	−122.959	18.042	−327.518	−142.307	−169.965	14.797
	700.00	61.385	350.365	315.847	−116.839	24.162	−362.094	−143.193	−174.508	13.022
	800.00	61.715	358.583	320.686	−110.684	30.317	−397.550	−144.360	−178.906	11.681
	900.00	62.030	365.870	325.310	−104.496	36.505	−433.780	−145.930	−183.135	10.629
	1000.00	62.355	372.423	329.699	−98.277	42.724	−470.700	−148.228	−187.155	9.776
	1100.00	62.699	378.382	333.858	−92.025	48.976	−508.244	−151.279	−190.886	9.064
	1200.00	63.064	383.853	337.799	−85.737	55.264	−546.360	−153.884	−194.390	8.462
	1300.00	63.446	388.916	341.539	−79.411	61.590	−585.001	−154.775	−197.730	7.945
	1400.00	63.839	393.632	345.093	−73.047	67.954	−624.131	−155.719	−200.999	7.499
	1500.00	64.233	398.050	348.478	−66.643	74.358	−663.718	−156.715	−204.199	7.111
	1600.00	64.621	402.208	351.707	−60.201	80.800	−703.733	−157.762	−207.331	6.769
	1700.00	64.992	406.136	354.795	−53.720	87.281	−744.152	−159.813	−210.377	6.464
	1800.00	65.335	409.861	357.751	−47.203	93.798	−784.953	−161.304	−213.308	6.190
	1900.00	65.639	413.402	360.588	−40.654	100.347	−826.118	−176.950	−215.454	5.923
	2000.00	65.893	416.776	363.314	−34.077	106.924	−867.628	−178.800	−217.432	5.679

References

Phase	H / S	C_p
GAS	Ja1	Ja1

FeCl3 IRON TRICHLORIDE 162.205

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	96.649	142.336	142.336	−399.405	0.000	−441.842	−399.405	−333.926	58.502
	300.00	96.859	142.934	142.337	−399.226	0.179	−442.106	−399.367	−333.519	58.071
	400.00	106.691	172.048	146.244	−389.083	10.322	−457.903	−397.050	−311.905	40.731
	500.00	119.871	197.311	153.975	−377.737	21.668	−476.392	−393.913	−290.961	30.397
	577.00	124.145	214.885	160.951	−368.285	31.120	−492.274	−391.010	−275.318	24.924
			74.688		43.095					
LIQ	577.00	133.888	289.573	160.951	−325.190	74.215	−492.274	−347.915	−275.318	24.924
	600.00	133.888	294.807	165.983	−322.111	77.294	−498.995	−346.827	−272.445	23.718
	603.20	133.888	295.519	166.668	−321.682	77.723	−499.939	−346.677	−272.049	23.558

References

Phase	H / S	C_p	Remarks
SOL	Ja1	Ja1	
LIQ	Ja1	Ja1	Ja1 BPT= 603.2 GAS (Fe2Cl6)

162.205

IRON TRICHLORIDE (GAS) **FeCl3**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	77.671	344.214	344.214	−253.132	0.000	−355.759	−253.132	−247.843	43.421
	300.00	77.737	344.695	344.216	−252.988	0.144	−356.397	−253.129	−247.810	43.148
	400.00	80.048	367.422	347.299	−245.083	8.049	−392.051	−253.050	−246.054	32.131
	500.00	81.122	385.413	353.185	−237.018	16.114	−429.725	−253.194	−244.294	25.521
	600.00	81.710	400.260	359.830	−228.874	24.258	−469.030	−253.591	−242.481	21.110
	700.00	82.068	412.885	366.530	−220.684	32.448	−509.703	−254.245	−240.581	17.952
	800.00	82.303	423.860	373.025	−212.464	40.668	−551.552	−255.199	−238.568	15.577
	900.00	82.467	433.564	379.223	−204.225	48.907	−594.433	−256.581	−236.411	13.721
	1000.00	82.587	442.259	385.099	−195.972	57.160	−638.231	−258.716	−234.065	12.226
	1100.00	82.678	450.135	390.659	−187.709	65.423	−682.857	−261.633	−231.445	10.990
	1200.00	82.749	457.332	395.920	−179.437	73.695	−728.236	−264.136	−228.610	9.951
	1300.00	82.807	463.958	400.902	−171.159	81.973	−774.305	−264.961	−225.616	9.065
	1400.00	82.854	470.096	405.628	−162.876	90.256	−821.011	−265.876	−222.556	8.304
	1500.00	82.894	475.814	410.119	−154.589	98.543	−868.310	−266.883	−219.427	7.641
	1600.00	82.928	481.165	414.394	−146.298	106.834	−916.162	−267.980	−216.228	7.059
	1700.00	82.958	486.193	418.471	−138.003	115.129	−964.532	−270.119	−212.939	6.543
	1800.00	82.985	490.936	422.366	−129.706	123.426	−1013.391	−271.734	−209.529	6.080
	1900.00	83.009	495.423	426.094	−121.406	131.726	−1062.711	−287.539	−205.325	5.645
	2000.00	83.030	499.682	429.668	−113.104	140.028	−1112.468	−289.576	−200.946	5.248

References

Phase	H / S	C_p
GAS	Ja1	Ja1

Fe2Cl4[g] DIIRON TETRACHLORIDE (GAS) 253.505

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	125.872	464.533	464.533	−431.370	0.000	−569.871	−431.370	−420.559	73.680
	300.00	125.950	465.312	464.536	−431.137	0.233	−570.731	−431.355	−420.492	73.214
	400.00	128.851	501.995	469.518	−418.379	12.991	−619.177	−430.784	−416.969	54.451
	500.00	130.290	530.919	479.008	−405.414	25.956	−670.874	−430.665	−413.539	43.202
	600.00	131.108	554.752	489.704	−392.341	39.029	−725.192	−431.038	−410.087	35.701
	700.00	131.652	575.005	500.479	−379.202	52.168	−781.705	−431.911	−406.534	30.336
	800.00	132.077	592.613	510.919	−366.015	65.355	−840.106	−433.367	−402.817	26.301
	900.00	132.458	608.192	520.879	−352.788	78.582	−900.161	−435.655	−398.871	23.150
	1000.00	132.830	622.167	530.321	−339.523	91.847	−961.691	−439.425	−394.601	20.612
	1100.00	133.209	634.845	539.255	−326.222	105.148	−1024.551	−444.730	−389.834	18.512
	1200.00	133.600	646.452	547.712	−312.881	118.489	−1088.624	−449.176	−384.685	16.745
	1300.00	134.003	657.162	555.724	−299.501	131.869	−1153.812	−450.228	−379.269	15.239
	1400.00	134.412	667.107	563.329	−286.080	145.290	−1220.031	−451.424	−373.767	13.945
	1500.00	134.820	676.395	570.561	−272.619	158.751	−1287.211	−452.761	−368.174	12.821
	1600.00	135.218	685.109	577.450	−259.117	172.253	−1355.291	−454.240	−362.487	11.834
	1700.00	135.597	693.318	584.027	−245.576	185.794	−1424.216	−457.763	−356.666	10.959
	1800.00	135.947	701.078	590.316	−231.998	199.372	−1493.939	−460.199	−350.650	10.176
	1900.00	136.257	708.437	596.341	−218.388	212.982	−1564.418	−490.979	−343.090	9.432
	2000.00	136.515	715.433	602.122	−204.749	226.621	−1635.615	−494.195	−335.223	8.755

References

Phase	H / S	C_p
GAS	Ja1	Ja1

324.410 DIIRON HEXACHLORIDE (GAS) **Fe2Cl6**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	173.633	537.126	537.126	−654.378	0.000	−814.522	−654.378	−598.689	104.888
	300.00	173.745	538.200	537.129	−654.057	0.321	−815.517	−654.338	−598.343	104.181
	400.00	177.687	588.804	544.002	−636.457	17.921	−871.979	−652.392	−579.984	75.738
	500.00	179.517	628.673	557.091	−618.587	35.791	−932.923	−650.938	−562.061	58.718
	600.00	180.518	661.500	571.837	−600.580	53.798	−997.480	−650.014	−544.382	47.393
	700.00	181.125	689.376	586.687	−582.496	71.882	−1065.059	−649.618	−526.815	39.311
	800.00	181.524	713.589	601.070	−564.362	90.016	−1135.234	−649.832	−509.265	33.252
	900.00	181.801	734.987	614.784	−546.195	108.183	−1207.683	−650.907	−491.641	28.534
	1000.00	182.003	754.152	627.779	−528.004	126.374	−1282.157	−653.491	−473.825	24.750
	1100.00	182.156	771.507	640.069	−509.796	144.582	−1358.454	−657.644	−455.629	21.636
	1200.00	182.274	787.362	651.692	−491.574	162.804	−1436.408	−660.972	−437.156	19.029
	1300.00	182.370	801.955	662.697	−473.342	181.036	−1515.884	−660.945	−418.507	16.816
	1400.00	182.448	815.473	673.133	−455.101	199.277	−1596.764	−661.101	−399.853	14.919
	1500.00	182.513	828.063	683.046	−436.853	217.525	−1678.948	−661.441	−381.182	13.274
	1600.00	182.569	839.844	692.482	−418.599	235.779	−1762.349	−661.964	−362.482	11.834
	1700.00	182.617	850.914	701.479	−400.340	254.038	−1846.893	−664.571	−343.706	10.561
	1800.00	182.659	861.353	710.074	−382.076	272.302	−1932.511	−666.132	−324.788	9.425
	1900.00	182.697	871.230	718.298	−363.808	290.570	−2019.145	−696.072	−304.373	8.368
	2000.00	182.731	880.602	726.181	−345.536	308.842	−2106.740	−698.480	−283.695	7.409
	2100.00	182.762	889.518	733.748	−327.262	327.116	−2195.250	−700.907	−262.897	6.539
	2200.00	182.790	898.021	741.024	−308.984	345.394	−2284.630	−703.355	−241.982	5.745
	2273.00	182.810	903.988	746.162	−295.640	358.738	−2350.405	−705.156	−226.643	5.208

References

Phase	H / S	C_p
GAS	Ja1	Ja1

FeF2 IRON DIFLUORIDE 93.844

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	68.118	86.985	86.985	−705.841	0.000	−731.776	−705.841	−663.179	116.186
	300.00	68.196	87.407	86.987	−705.715	0.126	−731.937	−705.819	−662.914	115.424
	400.00	71.971	107.564	89.709	−698.699	7.142	−741.725	−704.643	−648.790	84.723
	500.00	74.886	123.952	94.969	−691.350	14.491	−753.326	−703.509	−634.960	66.334
	600.00	77.139	137.813	100.984	−683.744	22.097	−766.431	−702.464	−621.350	54.093
	700.00	78.893	149.841	107.123	−675.939	29.902	−780.827	−701.538	−607.906	45.363
	800.00	80.260	160.469	113.140	−667.978	37.863	−796.353	−700.800	−594.583	38.822
	900.00	81.317	169.986	118.937	−659.897	45.944	−812.884	−700.398	−581.335	33.740
	1000.00	82.122	178.597	124.479	−651.723	54.118	−830.320	−700.681	−568.099	29.674
	1100.00	82.726	186.454	129.761	−643.479	62.362	−848.579	−701.693	−554.778	26.344
	1200.00	83.173	193.672	134.791	−635.183	70.658	−867.590	−702.254	−541.416	23.567
	1300.00	83.504	200.343	139.580	−626.849	78.992	−887.295	−701.110	−528.060	21.218
	1373.00	83.694	204.911	142.933	−620.746	85.095	−902.088	−700.318	−518.364	19.721
			37.787		51.882					
LIQ	1373.00	98.324	242.698	142.933	−568.864	136.977	−902.088	−648.436	−518.364	19.721
	1400.00	98.324	244.613	144.876	−566.209	139.632	−908.667	−647.760	−515.813	19.245
	1500.00	98.324	251.396	151.753	−556.376	149.465	−933.471	−645.315	−506.474	17.637
	1600.00	98.324	257.742	158.182	−546.544	159.297	−958.932	−642.967	−497.295	16.235
	1700.00	98.324	263.703	164.215	−536.712	169.129	−985.007	−641.665	−488.242	15.002
	1800.00	98.324	269.323	169.900	−526.879	178.962	−1011.661	−639.842	−479.270	13.908
	1900.00	98.324	274.639	175.274	−517.047	188.794	−1038.861	−652.210	−469.695	12.913
	2000.00	98.324	279.683	180.369	−507.214	198.627	−1066.580	−650.813	−460.125	12.017
	2100.00	98.324	284.480	185.214	−497.382	208.459	−1094.790	−649.424	−450.625	11.209
	2108.00	98.324	284.854	185.591	−496.595	209.246	−1097.067	−649.314	−449.868	11.147

References

Phase	H / S	C_p	Remarks
SOL	Ja1	Ja1	
LIQ	Ja1	Ja1	Ja1 BPT= 2108., L= 223.4 kJ

93.844

IRON DIFLUORIDE (GAS) **FeF2**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	56.039	265.375	265.375	−389.530	0.000	−468.652	−389.530	−400.055	70.088
	300.00	56.183	265.722	265.376	−389.426	0.104	−469.143	−389.530	−400.120	69.667
	400.00	61.188	282.677	267.654	−383.521	6.009	−496.591	−389.465	−403.657	52.712
	500.00	63.422	296.600	272.094	−377.277	12.253	−525.577	−389.436	−407.211	42.541
	600.00	64.564	308.275	277.178	−370.872	18.658	−555.837	−389.592	−410.755	35.759
	700.00	65.192	318.280	282.352	−364.381	25.149	−587.177	−389.981	−414.255	30.912
	800.00	65.545	327.010	287.401	−357.842	31.688	−619.450	−390.664	−417.681	27.272
	900.00	65.738	334.742	292.239	−351.277	38.253	−652.545	−391.779	−420.996	24.434
	1000.00	65.832	341.674	296.842	−344.698	44.832	−686.372	−393.656	−424.151	22.155
	1100.00	65.862	347.951	301.208	−338.113	51.417	−720.858	−396.327	−427.058	20.279
	1200.00	65.847	353.681	305.345	−331.527	58.003	−755.944	−398.598	−429.771	18.707
	1300.00	65.801	358.950	309.269	−324.945	64.585	−791.579	−399.206	−432.344	17.372
	1400.00	65.733	363.824	312.994	−318.368	71.162	−827.721	−399.919	−434.867	16.225
	1500.00	65.648	368.356	316.535	−311.798	77.732	−864.333	−400.737	−437.336	15.229
	1600.00	65.550	372.590	319.908	−305.238	84.292	−901.382	−401.661	−439.746	14.356
	1700.00	65.443	376.561	323.125	−298.689	90.841	−938.842	−403.642	−442.077	13.583
	1800.00	65.328	380.298	326.198	−292.150	97.380	−976.687	−405.113	−444.296	12.893
	1900.00	65.206	383.827	329.139	−285.623	103.907	−1014.895	−420.787	−445.728	12.254
	2000.00	65.080	387.168	331.958	−279.109	110.421	−1053.446	−422.707	−446.991	11.674
	2100.00	64.950	390.341	334.663	−272.607	116.923	−1092.323	−424.650	−448.158	11.147
	2200.00	64.817	393.359	337.263	−266.119	123.411	−1131.509	−426.614	−449.231	10.666

References

Phase	H / S	C_p
GAS	Ja1	Ja1

112.842

IRON TRIFLUORIDE **FeF3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	91.003	98.324	98.324	−1041.816	0.000	−1071.131	−1041.816	−972.303	170.343
	300.00	91.631	98.889	98.326	−1041.647	0.169	−1071.314	−1041.780	−971.872	169.218
	400.00	96.372	129.722	102.402	−1030.888	10.928	−1082.777	−1038.468	−949.034	123.931
	500.00	95.669	149.281	109.895	−1022.123	19.693	−1096.763	−1037.599	−926.785	96.821
	600.00	96.821	166.821	117.962	−1012.500	29.316	−1112.593	−1036.275	−904.750	78.766
	700.00	98.074	181.840	126.040	−1002.756	39.060	−1130.044	−1035.185	−882.919	65.884
	800.00	99.332	195.018	133.855	−992.885	48.931	−1148.900	−1034.339	−861.228	56.232
	900.00	100.586	206.790	141.317	−982.890	58.926	−1169.001	−1033.847	−839.623	48.730
	1000.00	101.840	217.453	148.406	−972.768	69.048	−1190.222	−1034.022	−818.041	42.730
	1100.00	103.097	227.219	155.133	−962.521	79.295	−1212.462	−1034.885	−796.387	37.817
	1199.00	104.339	236.156	161.458	−952.253	89.563	−1235.404	−1035.248	−774.925	33.760

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1	Ja1	SPT= 1199., L= 202.1 kJ

FeF3[g] IRON TRIFLUORIDE (GAS) 112.842

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	65.552	304.286	304.286	−820.901	0.000	−911.624	−820.901	−812.795	142.398
	300.00	65.675	304.692	304.287	−820.780	0.121	−912.187	−820.913	−812.745	141.512
	400.00	71.222	324.400	306.937	−813.916	6.985	−943.676	−821.495	−809.932	105.766
	500.00	74.730	340.701	312.107	−806.604	14.297	−976.955	−822.080	−806.976	84.304
	600.00	76.952	354.537	318.055	−799.012	21.889	−1011.734	−822.786	−803.891	69.985
	700.00	78.421	366.517	324.142	−791.239	29.662	−1047.800	−823.667	−800.675	59.747
	800.00	79.435	377.058	330.111	−783.343	37.558	−1084.990	−824.797	−797.317	52.059
	900.00	80.161	386.459	335.859	−775.361	45.540	−1123.174	−826.319	−793.796	46.071
	1000.00	80.697	394.933	341.349	−767.317	53.584	−1162.250	−828.571	−790.070	41.269
	1100.00	81.103	402.645	346.577	−759.226	61.675	−1202.135	−831.590	−786.060	37.327
	1200.00	81.418	409.715	351.548	−751.099	69.802	−1242.758	−834.184	−781.826	34.032
	1300.00	81.666	416.243	356.276	−742.945	77.956	−1284.060	−835.092	−777.426	31.237
	1400.00	81.865	422.302	360.779	−734.768	86.133	−1325.991	−836.087	−772.954	28.839
	1500.00	82.027	427.956	365.071	−726.573	94.328	−1368.507	−837.168	−768.407	26.758
	1600.00	82.161	433.254	369.168	−718.363	102.538	−1411.570	−838.338	−763.785	24.935
	1700.00	82.271	438.239	373.086	−710.142	110.759	−1455.148	−840.547	−759.069	23.323
	1800.00	82.364	442.944	376.838	−701.910	118.991	−1499.209	−842.231	−754.228	21.887
	1900.00	82.442	447.399	380.435	−693.669	127.232	−1543.728	−858.102	−748.589	20.580
	2000.00	82.509	451.630	383.890	−685.422	135.479	−1588.681	−860.206	−742.771	19.399

References

Phase	H / S	C_p
GAS	Ja1	Ja1

309.656

IRON DIIODIDE

FeI2

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−1	298.15	83.678	167.360	167.360	−104.600	0.000	−154.498	−104.600	−111.737	19.576
	300.00	83.683	167.878	167.362	−104.445	0.155	−154.808	−104.592	−111.782	19.463
	400.00	83.929	191.985	170.647	−96.065	8.535	−172.859	−120.476	−113.656	14.842
	500.00	84.176	210.740	176.859	−87.659	16.941	−193.029	−163.117	−107.866	11.269
	600.00	84.422	226.109	183.825	−79.229	25.371	−214.895	−161.526	−96.969	8.442
	650.00	84.545	232.871	187.341	−75.005	29.595	−226.372	−160.815	−91.618	7.363
			1.288		0.837					
SOL−2	650.00	87.655	234.159	187.341	−74.168	30.432	−226.372	−159.978	−91.618	7.363
	700.00	95.395	240.938	190.927	−69.592	35.008	−238.249	−158.981	−86.395	6.447
	800.00	110.876	254.687	198.035	−59.278	45.322	−263.028	−156.056	−76.211	4.976
	860.00	120.164	263.038	202.278	−52.347	52.253	−278.559	−153.748	−70.305	4.270
			52.057		44.769					
LIQ	860.00	112.968	315.094	202.278	−7.578	97.022	−278.559	−108.979	−70.305	4.270
	900.00	112.968	320.230	207.407	−3.059	101.541	−291.267	−107.649	−68.537	3.978
	1000.00	112.968	332.133	219.295	8.237	112.837	−323.895	−104.916	−64.347	3.361
	1100.00	112.968	342.900	230.050	19.534	124.134	−357.655	−102.963	−60.371	2.867
	1200.00	112.968	352.729	239.870	30.831	135.431	−392.444	−100.597	−56.622	2.465
	1300.00	112.968	361.771	248.904	42.128	146.728	−428.175	−96.551	−53.122	2.134
	1366.00	112.968	367.366	254.494	49.584	154.184	−452.238	−93.930	−50.983	1.950

References

Phase	H / S	C_p	Remarks
SOL−1	Ja1	Ja1	
SOL−2	Ja1	Ja1	
LIQ	Ja1	Ja1	Ja1 NBPT= 1366. GAS (Fe2J4 + FeJ2)

FeI2[g] IRON DIIODIDE (GAS) 309.656

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	60.853	349.473	349.473	87.864	0.000	−16.331	87.864	26.430	−4.630
	300.00	60.872	349.850	349.475	87.977	0.113	−16.978	87.830	26.049	−4.535
	400.00	61.519	367.466	351.872	94.102	6.238	−52.885	69.690	6.318	−0.825
	500.00	61.793	381.226	356.417	100.269	12.405	−90.344	24.811	−5.181	0.541
	600.00	61.981	392.509	361.520	106.458	18.594	−129.048	24.161	−11.122	0.968
	700.00	62.172	402.078	366.648	112.665	24.801	−168.790	23.276	−16.936	1.264
	800.00	62.397	410.394	371.608	118.893	31.029	−209.422	22.116	−22.605	1.476
	900.00	62.664	417.758	376.334	125.146	37.282	−250.837	20.556	−28.107	1.631
	1000.00	62.971	424.376	380.813	131.427	43.563	−292.949	18.274	−33.401	1.745
	1100.00	63.314	430.394	385.051	137.741	49.877	−335.692	15.244	−38.407	1.824
	1200.00	63.683	435.918	389.063	144.091	56.227	−379.011	12.663	−43.190	1.880
	1300.00	64.068	441.031	392.866	150.478	62.614	−422.862	11.800	−47.809	1.921
	1400.00	64.460	445.793	396.478	156.905	69.041	−467.206	10.885	−52.361	1.954
	1500.00	64.848	450.254	399.916	163.370	75.506	−512.011	9.920	−56.845	1.980
	1600.00	65.220	454.451	403.195	169.874	82.010	−557.248	8.903	−61.263	2.000
	1700.00	65.565	458.415	406.328	176.413	88.549	−602.893	6.882	−65.597	2.016
	1800.00	65.870	462.172	409.327	182.985	95.121	−648.924	5.419	−69.819	2.026
	1900.00	66.126	465.740	412.203	189.586	101.722	−695.321	−10.203	−73.255	2.014
	2000.00	66.319	469.137	414.965	196.208	108.344	−742.066	−12.032	−76.526	1.999

References

Phase	H / S	C_p
GAS	Ja1	Ja1

619.312

DIIRON TETRAIODIDE (GAS) **Fe2I4**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	131.469	543.611	543.611	8.368	0.000	−153.710	8.368	−68.187	11.946
	300.00	131.473	544.424	543.614	8.611	0.243	−154.716	8.317	−68.662	11.955
	400.00	131.739	582.281	548.773	21.771	13.403	−211.141	−27.053	−92.736	12.110
	500.00	132.064	611.712	558.526	34.961	26.593	−270.895	−115.954	−100.568	10.506
	600.00	132.413	635.820	569.459	48.185	39.817	−333.308	−116.409	−97.456	8.484
	700.00	132.772	656.259	580.436	61.444	53.076	−397.937	−117.334	−94.230	7.032
	800.00	133.138	674.012	591.048	74.739	66.371	−464.470	−118.815	−90.836	5.931
	900.00	133.506	689.715	601.155	88.071	79.703	−532.672	−121.107	−87.212	5.062
	1000.00	133.877	703.800	610.727	101.441	93.073	−602.359	−124.866	−83.263	4.349
	1100.00	134.249	716.577	619.778	114.847	106.479	−673.388	−130.148	−78.819	3.743
	1200.00	134.623	728.275	628.339	128.290	119.922	−745.639	−134.565	−73.995	3.221
	1300.00	134.996	739.065	636.447	141.771	133.403	−819.013	−135.585	−68.908	2.769
	1400.00	135.371	749.083	644.139	155.290	146.922	−893.426	−136.749	−63.736	2.378
	1500.00	135.745	758.435	651.450	168.846	160.478	−968.807	−138.055	−58.476	2.036
	1600.00	136.120	767.208	658.414	182.439	174.071	−1045.094	−139.503	−53.124	1.734
	1700.00	136.495	775.471	665.059	196.070	187.702	−1122.232	−142.994	−47.640	1.464
	1800.00	136.871	783.284	671.412	209.738	201.370	−1200.173	−145.395	−41.962	1.218
	1900.00	137.246	790.694	677.496	223.444	215.076	−1278.875	−176.133	−34.743	0.955
	2000.00	137.622	797.744	683.334	237.187	228.819	−1358.300	−179.294	−27.220	0.711

References

Phase	H / S	C_p
GAS	Ja1	Ja1

Fe3Mo2

3–IRON 2–MOLYBDENUM

359.421

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol		]	[–]
SOL	298.15	123.229	146.440	146.440	–4.184	0.000	–47.845	–4.184	–6.394	1.120
	300.00	123.236	147.202	146.442	–3.956	0.228	–48.117	–4.183	–6.408	1.116
	400.00	125.228	182.867	151.292	8.446	12.630	–64.701	–4.566	–7.112	0.929
	500.00	128.804	211.178	160.530	21.140	25.324	–84.449	–5.528	–7.647	0.799
	600.00	133.004	235.027	171.008	34.227	38.411	–106.789	–6.942	–7.945	0.692
	700.00	137.498	255.865	181.672	47.751	51.935	–131.355	–8.750	–7.974	0.595
	800.00	142.150	274.527	192.132	61.732	65.916	–157.890	–11.057	–7.714	0.504
	900.00	146.892	291.543	202.246	76.184	80.368	–186.205	–14.235	–7.117	0.413
	1000.00	151.691	307.268	211.972	91.112	95.296	–216.156	–19.262	–6.081	0.318
	1100.00	156.527	321.952	221.309	106.523	110.707	–247.624	–26.228	–4.381	0.208
	1200.00	161.388	335.780	230.278	122.419	126.603	–280.517	–31.555	–2.214	0.096
	1300.00	166.267	348.891	238.902	138.801	142.985	–314.756	–31.462	0.228	–0.009
	1400.00	171.159	361.391	247.208	155.672	159.856	–350.275	–31.269	2.659	–0.099
	1500.00	176.060	373.367	255.222	173.033	177.217	–387.017	–30.989	5.073	–0.177
	1600.00	180.969	384.886	262.968	190.885	195.069	–424.933	–30.635	7.466	–0.244

References

Phase	H / S	C_p
SOL	Ku1	e

FeMoO4

IRON MOLYBDATE

215.785

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol		]	[–]
SOL	298.15	118.449	129.286	129.286	–1065.832	0.000	–1104.379	–1065.832	–965.391	169.132
	300.00	118.761	130.019	129.288	–1065.613	0.219	–1104.618	–1065.812	–964.768	167.981
	400.00	130.914	166.031	134.115	–1053.066	12.766	–1119.478	–1064.287	–931.296	121.615
	500.00	138.315	196.090	143.589	–1039.581	26.251	–1137.626	–1062.322	–898.271	93.842
	600.00	143.845	221.815	154.534	–1025.463	40.369	–1158.552	–1060.230	–865.657	75.362
	700.00	148.491	244.346	165.788	–1010.841	54.991	–1181.883	–1058.118	–833.395	62.189
	800.00	152.667	264.450	176.886	–995.781	70.051	–1207.341	–1056.067	–801.433	52.328
	900.00	156.569	282.659	187.643	–980.317	85.515	–1234.710	–1054.213	–769.718	44.673
	1000.00	160.302	299.350	197.990	–964.472	101.360	–1263.822	–1052.882	–738.186	38.559
	1100.00	163.923	314.799	207.915	–948.260	117.572	–1294.539	–1052.102	–706.738	33.560
	1200.00	167.468	329.214	217.430	–931.690	134.142	–1326.748	–1050.677	–675.422	29.400
	1300.00	170.961	342.757	226.555	–914.768	151.064	–1360.353	–1047.344	–644.285	25.888
	1400.00	174.414	355.553	235.316	–897.499	168.333	–1395.274	–1043.877	–613.410	22.887
	1500.00	177.840	367.704	243.740	–879.886	185.946	–1431.442	–1040.282	–582.787	20.294

References

Phase	H / S	C_p
SOL	Tk1	Tk1,e

237.395

TETRAIRON NITRIDE

Fe4N

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL−A	298.15	122.591	155.252	155.252	−11.088	0.000	−57.376	−11.088	3.722	−0.652
	300.00	122.654	156.010	155.254	−10.861	0.227	−57.664	−11.073	3.813	−0.664
	400.00	126.068	191.763	160.106	1.575	12.663	−75.130	−10.600	8.689	−1.135
	500.00	129.482	220.261	169.380	14.352	25.440	−95.778	−10.700	13.510	−1.411
	600.00	132.896	244.170	179.905	27.471	38.559	−119.031	−11.426	18.410	−1.603
	700.00	136.311	264.913	190.599	40.932	52.020	−144.507	−12.804	23.481	−1.752
	753.00	138.120	274.926	196.185	48.204	59.292	−158.815	−13.851	26.266	−1.822
			11.113		8.368					
SOL−B	753.00	138.072	286.039	196.185	56.572	67.660	−158.815	−13.851	26.266	−1.822
	800.00	138.072	294.399	201.712	63.062	74.150	−172.458	−6.693	28.283	−1.847
	900.00	138.072	310.662	212.932	76.869	87.957	−202.727	−10.602	32.868	−1.908
	953.00	138.072	318.562	218.589	84.187	95.275	−219.403	−13.767	35.515	−1.947

References

Phase	H / S	C_p	Remarks	
SOL−A	Tk1	Ku1,e		
SOL−B	Tk1	e	Tk1	TPT= 953.

Fe0.947O WUESTITE 68.887

Phase	T [K]	C_p J/(K mol)	S J/(K mol)	−(G−H298)/T J/(K mol)	H kJ/mol	H−H298 kJ/mol	G kJ/mol	ΔH_f kJ/mol	ΔG_f kJ/mol	log K_f [−]
SOL	298.15	48.127	57.589	57.589	−266.270	0.000	−283.440	−266.270	−245.155	42.950
	300.00	48.181	57.886	57.590	−266.181	0.089	−283.547	−266.252	−245.024	42.663
	400.00	50.381	72.077	59.509	−261.243	5.027	−290.074	−265.287	−238.095	31.092
	500.00	51.848	83.484	63.201	−256.128	10.142	−297.870	−264.402	−231.402	24.174
	600.00	53.028	93.044	67.399	−250.883	15.387	−306.709	−263.661	−224.874	19.577
	700.00	54.071	101.298	71.665	−245.527	20.743	−316.436	−263.085	−218.458	16.302
	800.00	55.042	108.582	75.834	−240.071	26.199	−326.937	−262.722	−212.110	13.849
	900.00	55.971	115.119	79.842	−234.520	31.750	−338.127	−262.692	−205.790	11.944
	1000.00	56.873	121.063	83.671	−228.878	37.392	−349.941	−263.304	−199.443	10.418
	1100.00	57.759	126.525	87.322	−223.146	43.124	−362.324	−264.582	−192.981	9.164
	1200.00	58.632	131.589	90.802	−217.326	48.944	−375.233	−265.394	−186.454	8.116
	1300.00	59.498	136.316	94.124	−211.420	54.850	−388.631	−264.540	−179.910	7.229
	1400.00	60.358	140.757	97.297	−205.427	60.843	−402.486	−263.694	−173.432	6.471
	1500.00	61.213	144.950	100.336	−199.348	66.922	−416.774	−262.855	−167.014	5.816
	1600.00	62.065	148.928	103.250	−193.185	73.085	−431.469	−262.024	−160.652	5.245
	1650.00	62.490	150.844	104.663	−190.071	76.199	−438.964	−261.610	−157.490	4.986
			18.994		31.340					
LIQ	1650.00	65.840	169.838	104.663	−158.731	107.539	−438.964	−261.610	−157.490	4.986
	1700.00	65.840	171.804	106.609	−155.439	110.831	−447.505	−230.602	−155.276	4.771
	1800.00	65.840	175.567	110.336	−148.855	117.415	−464.875	−229.850	−150.867	4.378
	1900.00	65.840	179.127	113.864	−142.271	123.999	−482.612	−242.540	−145.832	4.009
	2000.00	65.840	182.504	117.212	−135.687	130.583	−500.695	−242.195	−140.752	3.676

References

Phase	H / S	C_p	Remarks	
SOL	Ja1,e	Ja1	Ja1	MPT= 1650., L= 31.34 kJ
LIQ	Ja1	e		

71.846 IRON MONOXIDE **FeO**

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	49.942	60.752	60.752	−272.044	0.000	−290.157	−272.044	−251.441	44.051
	300.00	49.975	61.061	60.753	−271.952	0.092	−290.270	−272.025	−251.314	43.758
	400.00	51.812	75.690	62.735	−266.862	5.182	−297.138	−271.047	−244.559	31.936
	500.00	53.452	87.432	66.538	−261.597	10.447	−305.313	−270.163	−238.042	24.868
	600.00	54.870	97.306	70.864	−256.179	15.865	−314.563	−269.413	−231.691	20.170
	700.00	56.131	105.861	75.266	−250.628	21.416	−324.730	−268.819	−225.453	16.824
	800.00	57.279	113.432	79.573	−244.957	27.087	−335.702	−268.432	−219.287	14.318
	900.00	58.342	120.241	83.719	−239.175	32.869	−347.391	−268.385	−213.152	12.371
	1000.00	59.334	126.439	87.686	−233.290	38.754	−359.730	−269.008	−206.990	10.812
	1100.00	60.263	132.139	91.471	−227.310	44.734	−372.663	−270.332	−200.709	9.531
	1200.00	61.134	137.420	95.083	−221.240	50.804	−386.144	−271.165	−194.362	8.460
	1300.00	61.948	142.346	98.531	−215.085	56.959	−400.135	−270.245	−187.999	7.554
	1400.00	62.706	146.965	101.828	−208.852	63.192	−414.603	−269.346	−181.706	6.780
	1500.00	63.406	151.315	104.983	−202.546	69.498	−429.519	−268.471	−175.477	6.111
	1600.00	64.047	155.428	108.009	−196.173	75.871	−444.858	−267.626	−169.305	5.527
	1650.00	64.345	157.403	109.476	−192.963	79.081	−452.679	−267.216	−166.239	5.263
			14.581		24.058					
LIQ	1650.00	68.199	171.984	109.476	−168.905	103.139	−452.679	−243.158	−166.239	5.263
	1700.00	68.199	174.020	111.344	−165.495	106.549	−461.329	−243.523	−163.898	5.036
	1800.00	68.199	177.918	114.935	−158.675	113.369	−478.928	−242.758	−159.237	4.621
	1900.00	68.199	181.605	118.348	−151.855	120.189	−496.906	−256.185	−153.914	4.231
	2000.00	68.199	185.104	121.599	−145.035	127.009	−515.243	−255.849	−148.540	3.879
	2100.00	68.199	188.431	124.703	−138.215	133.829	−533.921	−255.524	−143.182	3.561
	2200.00	68.199	191.604	127.673	−131.396	140.648	−552.924	−255.211	−137.840	3.273
	2300.00	68.199	194.635	130.519	−124.576	147.468	−572.237	−254.909	−132.512	3.009
	2400.00	68.199	197.538	133.251	−117.756	154.288	−591.846	−254.617	−127.197	2.768
	2500.00	68.199	200.322	135.879	−110.936	161.108	−611.740	−254.337	−121.893	2.547
	2600.00	68.199	202.997	138.409	−104.116	167.928	−631.907	−254.068	−116.601	2.343
	2700.00	68.199	205.570	140.849	−97.296	174.748	−652.336	−253.809	−111.319	2.154
	2800.00	68.199	208.051	143.205	−90.476	181.568	−673.018	−253.560	−106.046	1.978
	2900.00	68.199	210.444	145.483	−83.656	188.388	−693.944	−253.322	−100.782	1.815
	3000.00	68.199	212.756	147.687	−76.836	195.208	−715.104	−253.093	−95.525	1.663
	3100.00	68.199	214.992	149.822	−70.016	202.028	−736.492	−252.873	−90.277	1.521
	3200.00	68.199	217.157	151.893	−63.196	208.848	−758.100	−600.995	−77.417	1.264
	3300.00	68.199	219.256	153.902	−56.376	215.668	−779.922	−598.890	−61.088	0.967
	3400.00	68.199	221.292	155.855	−49.557	222.487	−801.949	−596.825	−44.822	0.689
	3500.00	68.199	223.269	157.753	−42.737	229.307	−824.178	−594.797	−28.616	0.427
	3600.00	68.199	225.190	159.599	−35.917	236.127	−846.601	−592.807	−12.468	0.181
	3687.00	68.199	226.819	161.166	−29.983	242.061	−866.264	−591.105	1.536	−0.022

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja1	NDPT= 3687.

FeO[g] IRON MONOXIDE (GAS) 71.846

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[–]
GAS	298.15	31.408	241.924	241.924	251.040	0.000	178.910	251.040	217.626	–38.127
	300.00	31.440	242.118	241.925	251.098	0.058	178.463	251.025	217.419	–37.856
	400.00	33.067	251.393	243.178	254.326	3.286	153.769	250.141	206.347	–26.946
	500.00	34.265	258.909	245.596	257.696	6.656	128.242	249.130	195.513	–20.425
	600.00	35.095	265.234	248.356	261.167	10.127	102.026	247.932	184.898	–16.097
	700.00	35.684	270.691	251.166	264.707	13.667	75.224	246.516	174.501	–13.021
	800.00	36.115	275.485	253.912	268.298	17.258	47.910	244.823	164.325	–10.729
	900.00	36.439	279.758	256.551	271.927	20.887	20.144	242.716	154.384	–8.960
	1000.00	36.689	283.611	259.067	275.584	24.544	–8.027	239.866	144.713	–7.559
	1100.00	36.888	287.118	261.460	279.263	28.223	–36.566	236.241	135.387	–6.429
	1200.00	37.050	290.334	263.734	282.960	31.920	–65.441	233.035	126.341	–5.499
	1300.00	37.189	293.306	265.896	286.672	35.632	–94.625	231.512	117.511	–4.722
	1400.00	37.313	296.066	267.954	290.397	39.357	–124.095	229.904	108.801	–4.059
	1500.00	37.430	298.645	269.915	294.135	43.095	–153.832	228.210	100.209	–3.490
	1600.00	37.548	301.064	271.787	297.883	46.843	–183.819	226.431	91.734	–2.995
	1700.00	37.672	303.344	273.577	301.644	50.604	–214.040	223.617	83.390	–2.562
	1800.00	37.798	305.501	275.291	305.417	54.377	–244.484	221.335	75.207	–2.182
	1900.00	37.929	307.548	276.935	309.204	58.164	–275.137	204.874	67.855	–1.865
	2000.00	38.064	309.497	278.515	313.003	61.963	–305.990	202.190	60.713	–1.586
	2100.00	38.207	311.357	280.035	316.817	65.777	–337.033	199.508	53.705	–1.336
	2200.00	38.359	313.138	281.499	320.645	69.605	–368.259	196.830	46.825	–1.112
	2300.00	38.522	314.847	282.912	324.489	73.449	–399.658	194.156	40.066	–0.910
	2400.00	38.694	316.490	284.277	328.350	77.310	–431.226	191.488	33.424	–0.727
	2500.00	38.874	318.073	285.598	332.228	81.188	–462.954	188.827	26.893	–0.562
	2600.00	39.060	319.601	286.876	336.125	85.085	–494.839	186.173	20.468	–0.411
	2700.00	39.252	321.079	288.116	340.040	89.000	–526.873	183.527	14.145	–0.274
	2800.00	39.448	322.510	289.319	343.975	92.935	–559.053	180.891	7.920	–0.148
	2900.00	39.646	323.898	290.487	347.930	96.890	–591.373	178.264	1.789	–0.032
	3000.00	39.845	325.245	291.624	351.904	100.864	–623.831	175.648	–4.252	0.074
	3100.00	40.045	326.555	292.729	355.899	104.859	–656.421	173.042	–10.206	0.172
	3200.00	40.244	327.829	293.806	359.913	108.873	–689.141	–177.885	–8.458	0.138
	3300.00	40.441	329.071	294.856	363.948	112.908	–721.986	–178.566	–3.153	0.050
	3400.00	40.636	330.281	295.881	368.001	116.961	–754.954	–179.267	2.173	–0.033
	3500.00	40.827	331.462	296.880	372.075	121.035	–788.041	–179.986	7.520	–0.112
	3600.00	41.015	332.614	297.857	376.167	125.127	–821.245	–180.723	12.888	–0.187
	3700.00	41.199	333.741	298.812	380.278	129.238	–854.563	–181.479	18.276	–0.258
	3800.00	41.378	334.842	299.745	384.406	133.366	–887.993	–182.252	23.686	–0.326
	3900.00	41.551	335.919	300.659	388.553	137.513	–921.531	–183.043	29.115	–0.390
	4000.00	41.720	336.973	301.554	392.716	141.676	–955.176	–183.851	34.565	–0.451
	4100.00	41.883	338.005	302.430	396.897	145.857	–988.925	–184.677	40.036	–0.510
	4200.00	42.039	339.016	303.290	401.093	150.053	–1022.776	–185.519	45.527	–0.566
	4300.00	42.190	340.007	304.132	405.304	154.264	–1056.727	–186.379	51.038	–0.620
	4400.00	42.335	340.979	304.958	409.531	158.491	–1090.777	–187.256	56.570	–0.672
	4500.00	42.474	341.932	305.769	413.771	162.731	–1124.922	–188.149	62.121	–0.721
	4600.00	42.606	342.867	306.566	418.025	166.985	–1159.163	–189.060	67.693	–0.769
	4700.00	42.732	343.785	307.348	422.292	171.252	–1193.495	–189.988	73.284	–0.814
	4800.00	42.852	344.685	308.116	426.571	175.531	–1227.919	–190.933	78.896	–0.859
	4900.00	42.966	345.570	308.872	430.862	179.822	–1262.432	–191.895	84.527	–0.901
	5000.00	43.073	346.439	309.614	435.164	184.124	–1297.032	–192.875	90.178	–0.942

Phase	H / S	C_p	Remarks
GAS	Ja1	Ja1	
LIQ	Ja1	Ja1	Ja1 NDPT= 3687.

71.846

IRON MONOXIDE (GAS) [continued] **FeO[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	5100.00	43.174	347.293	310.345	439.477	188.437	−1331.719	−193.873	95.849	−0.982
	5200.00	43.270	348.133	311.064	443.799	192.759	−1366.491	−194.888	101.540	−1.020
	5300.00	43.359	348.958	311.771	448.131	197.091	−1401.345	−195.922	107.250	−1.057
	5400.00	43.442	349.769	312.467	452.471	201.431	−1436.282	−196.974	112.981	−1.093
	5500.00	43.520	350.567	313.152	456.819	205.779	−1471.299	−198.045	118.730	−1.128
	5600.00	43.592	351.352	313.828	461.174	210.134	−1506.395	−199.135	124.500	−1.161
	5700.00	43.659	352.124	314.493	465.537	214.497	−1541.568	−200.245	130.289	−1.194
	5800.00	43.721	352.884	315.148	469.906	218.866	−1576.819	−201.374	136.097	−1.226
	5900.00	43.777	353.632	315.794	474.281	223.241	−1612.145	−202.523	141.926	−1.257
	6000.00	43.829	354.368	316.431	478.661	227.621	−1647.545	−203.692	147.774	−1.286

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja1	NDPT= 3687.

159.692

HEMATITE **Fe2O3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	103.866	87.404	87.404	−824.248	0.000	−850.307	−824.248	−742.294	130.047
	300.00	104.182	88.047	87.406	−824.056	0.192	−850.470	−824.230	−741.785	129.156
	400.00	120.120	120.295	91.694	−812.808	11.440	−860.926	−822.691	−714.507	93.305
	500.00	131.806	148.420	100.288	−800.182	24.066	−874.392	−820.357	−687.720	71.846
	600.00	141.147	173.297	110.422	−786.523	37.725	−890.501	−817.614	−661.445	57.584
	700.00	149.751	195.704	121.030	−771.976	52.272	−908.969	−814.607	−635.651	47.433
	800.00	158.206	216.254	131.665	−756.577	67.671	−929.580	−811.447	−610.301	39.849
	900.00	166.492	235.369	142.138	−740.340	83.908	−952.172	−808.381	−585.344	33.973
	960.00	171.244	246.267	148.308	−730.207	94.041	−966.623	−806.838	−570.527	31.043
			0.000		0.000					
SOL−B	960.00	171.372	246.267	148.308	−730.207	94.041	−966.623	−806.838	−570.527	31.043
	1000.00	150.750	252.786	152.360	−723.821	100.427	−976.608	−806.608	−560.690	29.287
	1100.00	140.891	266.442	162.127	−709.501	114.747	−1002.587	−808.651	−535.980	25.452
	1200.00	141.458	278.716	171.338	−695.394	128.854	−1029.853	−810.124	−511.164	22.250
	1300.00	142.203	290.069	180.040	−681.210	143.038	−1058.300	−808.201	−486.330	19.541
	1400.00	142.908	300.633	188.281	−666.955	157.293	−1087.841	−806.420	−461.638	17.224
	1500.00	143.671	310.518	196.104	−652.626	171.622	−1118.404	−804.775	−437.069	15.220
	1600.00	144.490	319.817	203.548	−638.218	186.030	−1149.925	−803.257	−412.606	13.470
	1700.00	145.193	328.599	210.648	−623.732	200.516	−1182.350	−803.766	−388.196	11.928

References

Phase	H / S	C_p	Remarks	
SOL−A	Pa1	Ja1	Pa1	CURIE − PT= 960.
SOL−B	Pa1	Ja1	Ja1	NDPT= 1735.

Fe3O4 MAGNETITE 231.539

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol		]	[−]
SOL−A	298.15	150.730	146.147	146.147	−1118.383	0.000	−1161.957	−1118.383	−1015.227	177.864
	300.00	151.544	147.082	146.150	−1118.103	0.280	−1162.228	−1118.351	−1014.587	176.655
	400.00	175.652	194.497	152.455	−1101.566	16.817	−1179.365	−1115.634	−980.368	128.023
	500.00	192.629	235.548	165.058	−1083.138	35.245	−1200.912	−1111.880	−946.969	98.929
	600.00	208.442	272.062	179.902	−1063.087	55.296	−1226.324	−1107.412	−914.396	79.605
	700.00	228.936	305.605	195.488	−1041.301	77.082	−1255.225	−1102.124	−882.629	65.863
	800.00	266.769	338.365	211.294	−1016.726	101.657	−1287.418	−1095.071	−851.723	55.612
	850.00	297.361	355.406	219.266	−1002.663	115.720	−1304.759	−1090.254	−836.656	51.415
			0.000		0.000					
SOL−B	850.00	229.894	355.406	219.266	−1002.663	115.720	−1304.759	−1090.254	−836.656	51.415
	900.00	220.730	368.277	227.192	−991.407	126.976	−1322.856	−1088.659	−821.789	47.695
	1000.00	207.916	390.814	242.459	−970.027	148.356	−1360.842	−1088.531	−792.184	41.379
	1100.00	200.321	410.241	256.848	−949.651	168.732	−1400.916	−1091.822	−762.355	36.201
	1200.00	196.280	427.477	270.362	−929.845	188.538	−1442.817	−1094.501	−732.346	31.878
	1300.00	194.744	443.113	283.058	−910.312	208.071	−1486.358	−1092.463	−702.253	28.217
	1400.00	195.024	457.545	295.012	−890.836	227.547	−1531.400	−1090.796	−672.301	25.084
	1500.00	196.652	471.049	306.302	−871.262	247.121	−1577.836	−1089.336	−642.460	22.372
	1600.00	199.302	483.821	317.001	−851.472	266.911	−1625.585	−1087.963	−612.713	20.003
	1700.00	202.739	496.003	327.175	−831.376	287.007	−1674.581	−1089.437	−582.996	17.913
	1800.00	206.794	507.704	336.882	−810.903	307.480	−1724.770	−1088.987	−553.218	16.054
	1870.00	209.931	515.652	343.425	−796.319	322.064	−1760.588	−1130.625	−530.983	14.832
			73.835		138.072					
LIQ	1870.00	213.384	589.487	343.425	−658.247	460.136	−1760.588	−992.553	−530.983	14.832
	1900.00	213.384	592.883	347.337	−651.846	466.537	−1778.324	−992.542	−523.578	14.394
	2000.00	213.384	603.828	359.891	−630.507	487.876	−1838.164	−992.536	−498.896	13.030

References

Phase	H / S	C_p	Remarks	
SOL−A	Pa1	Pa1	Pa1	CURIE−PT.= 850.
SOL−B	Pa1	Pa1		
LIQ	Pa1	e		

173.808

IRON DIALUMINIUM TETRAOXIDE

FeAl2O4

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	123.544	106.299	106.299	−1995.299	0.000	−2026.992	−1995.299	−1879.669	329.310
	300.00	124.025	107.064	106.301	−1995.070	0.229	−2027.189	−1995.315	−1878.951	327.155
	400.00	141.874	145.503	111.421	−1981.666	13.633	−2039.867	−1995.493	−1840.106	240.293
	500.00	151.540	178.287	121.602	−1966.956	28.343	−2056.100	−1995.035	−1801.307	188.181
	600.00	157.986	206.517	133.457	−1951.463	43.836	−2075.373	−1994.458	−1762.615	153.449
	700.00	162.910	231.255	145.697	−1935.409	59.890	−2097.287	−1993.977	−1724.015	128.648
	800.00	167.024	253.283	157.794	−1918.907	76.392	−2121.534	−1993.769	−1685.468	110.050
	900.00	170.667	273.170	169.526	−1902.020	93.279	−2147.873	−1994.101	−1646.918	95.585
	1000.00	174.017	291.327	180.811	−1884.784	110.515	−2176.110	−2016.455	−1606.768	83.929
	1100.00	177.176	308.062	191.629	−1867.223	128.076	−2206.091	−2017.812	−1565.717	74.350
	1200.00	180.204	323.609	201.987	−1849.353	145.946	−2237.683	−2018.518	−1524.604	66.364
	1300.00	183.141	338.149	211.908	−1831.185	164.114	−2270.779	−2017.309	−1483.493	59.607
	1400.00	186.012	351.827	221.418	−1812.727	182.572	−2305.284	−2015.955	−1442.480	53.820
	1500.00	188.833	364.757	230.547	−1793.984	201.315	−2341.119	−2014.455	−1401.569	48.807
	1600.00	191.616	377.033	239.322	−1774.961	220.338	−2378.214	−2012.810	−1360.763	44.424
	1700.00	194.371	388.732	247.769	−1755.662	239.637	−2416.507	−2011.973	−1320.045	40.560
	1800.00	197.103	399.920	255.913	−1736.088	259.211	−2455.943	−2010.377	−1279.389	37.127
	1900.00	199.817	410.649	263.777	−1716.242	279.057	−2496.475	−2022.737	−1238.123	34.038
	2000.00	202.517	420.967	271.380	−1696.125	299.174	−2538.059	−2021.098	−1196.869	31.259
	2073.00	204.480	428.262	276.777	−1681.270	314.029	−2569.057	−2019.760	−1166.808	29.401

References

Phase	H / S	C_p	Remarks
SOL	Nb1	Nb1,e	Tk1 MPT= 2073.

107.299

IRON CHLORIDE OXIDE

FeOCl

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	77.032	80.751	80.751	−376.999	0.000	−401.075	−376.999	−329.098	57.657
	300.00	77.082	81.228	80.753	−376.856	0.143	−401.225	−376.961	−328.801	57.249
	400.00	79.764	103.770	83.808	−369.014	7.985	−410.522	−374.964	−313.050	40.880
	500.00	82.446	121.857	89.666	−360.904	16.095	−421.832	−373.021	−297.798	31.111
	600.00	85.128	137.126	96.336	−352.525	24.474	−434.800	−371.128	−282.932	24.631
	700.00	87.810	150.450	103.134	−343.878	33.121	−449.193	−369.276	−268.380	20.027
	800.00	90.492	162.350	109.805	−334.963	42.036	−464.843	−367.498	−254.088	16.590

References

Phase	H / S	C_p
SOL	Nb1/Sc1	e

Fe(OH)2 IRON DIHYDROXIDE 89.862

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	97.036	87.998	87.998	−568.999	0.000	−595.236	−568.999	−486.975	85.316
	300.00	97.126	88.598	88.000	−568.819	0.180	−595.399	−568.973	−486.466	84.701
	400.00	102.156	117.226	91.869	−558.856	10.143	−605.747	−567.513	−459.179	59.963
	500.00	107.027	140.551	99.341	−548.394	20.605	−618.670	−565.885	−432.281	45.160
	600.00	111.447	160.463	107.908	−537.466	31.533	−633.744	−564.134	−405.723	35.321
	700.00	115.319	177.941	116.689	−526.123	42.876	−650.682	−562.312	−379.465	28.316
	800.00	118.601	193.560	125.339	−514.422	54.577	−669.270	−560.517	−353.468	23.079
	900.00	121.272	207.690	133.717	−502.423	66.576	−689.344	−558.930	−327.685	19.018
	1000.00	123.323	220.579	141.768	−490.188	78.811	−710.767	−557.937	−302.053	15.778

References

Phase	H / S	C_p
SOL	Nb1	Ja1

Fe(OH)3 IRON TRIHYDROXIDE 106.869

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	101.489	106.700	106.700	−822.997	0.000	−854.810	−822.997	−696.486	122.021
	300.00	101.880	107.329	106.702	−822.809	0.188	−855.008	−823.017	−695.701	121.132
	400.00	118.596	139.099	110.921	−811.726	11.271	−867.365	−823.375	−653.173	85.296
	500.00	130.518	166.902	119.396	−799.244	23.753	−882.695	−822.718	−610.682	63.798
	600.00	140.042	191.568	129.407	−785.700	37.297	−900.641	−821.395	−568.390	49.483
	700.00	147.986	213.770	139.899	−771.288	51.709	−920.927	−819.601	−526.359	39.277
	800.00	154.694	233.981	150.415	−756.144	66.853	−943.329	−817.508	−484.608	31.642
	900.00	160.329	252.537	160.745	−740.385	82.612	−967.668	−815.350	−443.125	25.718
	1000.00	164.978	269.678	170.792	−724.111	98.886	−993.789	−813.551	−401.870	20.992

References

Phase	H / S	C_p
SOL	Nb1	Ja1

177.707

IRON TRIOXIDE HYDRATE (GOETHITE) **Fe2O3*H2O**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	175.728	118.826	118.826	−1117.998	0.000	−1153.426	−1117.998	−975.868	170.968
	300.00	176.412	119.915	118.829	−1117.672	0.326	−1153.647	−1117.927	−974.986	169.760
	400.00	213.384	175.729	126.190	−1098.182	19.816	−1168.474	−1112.537	−928.067	121.193

References

Phase	H / S	C_p
SOL	Nb1/e	e

199.997

DIIRON MAGNESIUM TETRAOXIDE **Fe2MgO4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	143.718	123.800	123.800	−1428.857	0.000	−1465.768	−1428.857	−1317.429	230.808
	300.00	143.779	124.690	123.803	−1428.591	0.266	−1465.998	−1428.838	−1316.738	229.264
	400.00	147.051	166.500	129.482	−1414.050	14.807	−1480.650	−1428.042	−1279.502	167.086
	500.00	150.323	199.665	140.313	−1399.181	29.676	−1499.014	−1427.664	−1242.420	129.795
	600.00	153.595	227.362	152.575	−1383.985	44.872	−1520.402	−1427.751	−1205.371	104.937
	700.00	156.867	251.284	165.005	−1368.462	60.395	−1544.361	−1428.300	−1168.271	87.177
	800.00	160.138	272.444	177.138	−1352.612	76.245	−1570.567	−1429.378	−1131.057	73.850
	900.00	163.410	291.495	188.803	−1336.434	92.423	−1598.779	−1431.215	−1093.666	63.475
	1000.00	166.682	308.881	199.954	−1319.930	108.927	−1628.811	−1443.393	−1055.248	55.120
	1100.00	169.954	324.921	210.594	−1303.098	125.759	−1660.511	−1447.942	−1016.183	48.255
	1200.00	173.226	339.849	220.751	−1285.939	142.918	−1693.758	−1451.402	−976.816	42.520
	1300.00	176.498	353.844	230.456	−1268.453	160.404	−1728.450	−1451.232	−937.273	37.660
	1400.00	179.770	367.043	239.745	−1250.639	178.218	−1764.500	−1577.927	−894.119	33.360
	1500.00	183.042	379.558	248.652	−1232.499	196.358	−1801.836	−1576.369	−845.329	29.437
	1600.00	186.314	391.476	257.209	−1214.031	214.826	−1840.392	−1574.703	−796.647	26.008
	1700.00	189.585	402.869	265.445	−1195.236	233.621	−1880.113	−1574.828	−748.035	22.984
	1800.00	192.857	413.798	273.385	−1176.114	252.743	−1920.950	−1573.610	−699.435	20.297
	1900.00	196.129	424.313	281.054	−1156.665	272.192	−1962.859	−1600.473	−649.501	17.856
	2000.00	199.401	434.456	288.472	−1136.888	291.969	−2005.800	−1599.505	−599.474	15.657

References

Phase	H / S	C_p
SOL	Nb1	e

Fe2MnO4 DIIRON MANGANESE TETRAOXIDE 230.630

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
SOL−1	298.15	149.538	153.971	153.971	−1226.000	0.000	−1271.907	−1226.000	−1123.767	196.879
	300.00	149.954	154.897	153.974	−1225.723	0.277	−1272.192	−1225.973	−1123.133	195.555
	400.00	167.558	200.633	160.091	−1209.783	16.217	−1290.036	−1223.957	−1089.130	142.226
	500.00	180.322	239.445	172.177	−1192.366	33.634	−1312.089	−1221.279	−1055.725	110.291
	560.00	186.982	260.256	180.514	−1181.344	44.656	−1327.088	−1219.514	−1035.959	96.630
			0.000		0.000					
SOL−2	560.00	192.464	260.256	180.514	−1181.344	44.656	−1327.088	−1219.514	−1035.959	96.630
	600.00	192.464	273.535	186.278	−1173.646	52.354	−1337.767	−1218.159	−1022.896	89.051
	700.00	192.464	303.203	200.917	−1154.399	71.601	−1366.642	−1215.356	−990.585	73.918
	800.00	192.464	328.903	215.344	−1135.153	90.847	−1398.276	−1213.426	−958.618	62.591
	900.00	192.464	351.572	229.246	−1115.906	110.094	−1432.322	−1212.599	−926.830	53.792
	1000.00	192.464	371.850	242.510	−1096.660	129.340	−1468.510	−1215.740	−895.005	46.750
	1100.00	192.464	390.194	255.116	−1077.414	148.586	−1506.627	−1218.401	−862.776	40.970
	1200.00	192.464	406.941	267.080	−1058.167	167.833	−1546.496	−1220.342	−830.400	36.146
	1300.00	192.464	422.346	278.439	−1038.921	187.079	−1587.971	−1219.022	−797.960	32.062
	1400.00	192.464	436.609	289.234	−1019.674	206.326	−1630.927	−1220.254	−765.547	28.563
	1500.00	192.464	449.888	299.507	−1000.428	225.572	−1675.260	−1221.929	−732.957	25.524
	1600.00	192.464	462.309	309.298	−981.182	244.818	−1720.876	−1234.066	−699.698	22.843
	1700.00	192.464	473.977	318.645	−961.935	264.065	−1767.697	−1236.264	−666.254	20.472
	1800.00	192.464	484.978	327.583	−942.689	283.311	−1815.650	−1237.445	−632.692	18.360
	1843.00	192.464	489.522	331.309	−934.413	291.587	−1836.602	−1265.867	−617.717	17.507

References

Phase	H / S	C_p	Remarks	
SOL−1	Tk1	e		
SOL−2	u	e	Tk1	MPT= 1843.

110.836

IRON SODIUM DIOXIDE

FeNaO2

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−B	298.15	84.517	88.299	88.299	−698.787	0.000	−725.113	−698.787	−640.474	112.208
	300.00	84.542	88.822	88.301	−698.631	0.156	−725.277	−698.783	−640.112	111.453
	400.00	85.872	113.325	91.633	−690.110	8.677	−735.440	−701.481	−620.354	81.010
	500.00	87.203	132.630	97.968	−681.456	17.331	−747.771	−701.840	−600.032	62.685
	600.00	88.533	148.647	105.117	−672.669	26.118	−761.857	−702.317	−579.628	50.461
	700.00	89.864	162.394	112.341	−663.749	35.038	−777.425	−702.933	−559.133	41.723
	800.00	91.194	174.481	119.368	−654.697	44.090	−794.281	−703.742	−538.538	35.163
	900.00	92.525	185.299	126.103	−645.511	53.276	−812.279	−704.881	−517.824	30.054
	1000.00	93.855	195.116	132.521	−636.192	62.595	−831.308	−706.687	−496.952	25.958
	1100.00	95.186	204.124	138.626	−626.739	72.048	−851.276	−709.202	−475.842	22.596
	1200.00	96.517	212.463	144.436	−617.154	81.633	−872.110	−808.006	−452.115	19.680
	1300.00	97.847	220.241	149.971	−607.436	91.351	−893.750	−807.392	−422.483	16.976
	1400.00	99.178	227.541	155.254	−597.585	101.202	−916.142	−806.760	−392.898	14.659
	1500.00	100.508	234.429	160.305	−587.601	111.186	−939.244	−806.107	−363.359	12.653
	1600.00	101.839	240.958	165.143	−577.483	121.304	−963.016	−805.430	−333.864	10.900
	1620.00	102.105	242.225	166.087	−575.444	123.343	−967.848	−805.291	−327.970	10.575
			30.476		49.371					
LIQ	1620.00	125.520	272.701	166.087	−526.073	172.714	−967.848	−755.920	−327.970	10.575
	1700.00	125.520	278.751	171.248	−516.031	182.756	−989.908	−754.477	−306.877	9.429
	1800.00	125.520	285.926	177.421	−503.479	195.308	−1018.145	−751.917	−280.622	8.143
	1900.00	125.520	292.712	183.312	−490.927	207.860	−1047.080	−763.561	−253.804	6.978
	2000.00	125.520	299.150	188.945	−478.375	220.412	−1076.676	−761.454	−227.029	5.929

References

Phase	H / S	C_p	Remarks	
SOL−B	Nb1,Tk1	e	Tk1	TPT= 870., 1270.
LIQ	Tk1	e		

Fe2NiO4 — DIIRON NICKEL TETRAOXIDE — 234.382

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	145.599	131.800	131.800	−1081.100	0.000	−1120.396	−1081.100	−972.893	170.447
	300.00	145.949	132.702	131.803	−1080.830	0.270	−1120.641	−1081.080	−972.222	169.279
	400.00	160.951	176.892	137.727	−1065.434	15.666	−1136.191	−1079.610	−936.140	122.247
	500.00	172.075	214.044	149.372	−1048.764	32.336	−1155.786	−1077.718	−900.487	94.073
	600.00	181.673	246.280	162.894	−1031.068	50.032	−1178.836	−1075.789	−865.223	75.324
	700.00	190.550	274.958	176.891	−1012.453	68.647	−1204.924	−1073.659	−830.285	61.957
	800.00	199.043	300.960	190.799	−992.971	88.129	−1233.739	−1071.176	−795.687	51.953
	863.00	204.272	316.245	199.403	−980.266	100.834	−1253.185	−1069.681	−774.050	46.851
			0.994		0.858					
SOL−B	863.00	213.384	317.239	199.403	−979.408	101.692	−1253.185	−1068.823	−774.050	46.851
	900.00	213.384	326.197	204.433	−971.513	109.587	−1265.090	−1067.744	−761.436	44.193
	1000.00	213.384	348.679	217.753	−950.174	130.926	−1298.853	−1066.129	−727.509	38.001
	1100.00	213.384	369.017	230.595	−928.836	152.264	−1334.754	−1066.253	−693.614	32.937
	1200.00	213.384	387.583	242.915	−907.498	173.602	−1372.598	−1065.711	−659.801	28.720

References

Phase	H / S	C_p
SOL−A	Nb1	e
SOL−B	Tk1	e

FeSiO3 — IRON METASILICATE — 131.931

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	89.454	93.927	93.927	−1194.950	0.000	−1222.954	−1194.950	−1117.463	195.775
	300.00	89.728	94.481	93.928	−1194.784	0.166	−1223.128	−1194.949	−1116.982	194.484
	400.00	100.850	121.958	97.599	−1185.206	9.744	−1233.990	−1194.576	−1091.034	142.474
	500.00	108.290	145.301	104.865	−1174.732	20.218	−1247.382	−1193.821	−1065.230	111.284
	600.00	114.281	165.589	113.331	−1163.595	31.355	−1262.949	−1192.889	−1039.598	90.505
	700.00	119.588	183.610	122.107	−1151.898	43.052	−1280.425	−1191.851	−1014.130	75.675
	800.00	124.530	199.904	130.829	−1139.690	55.260	−1299.613	−1190.773	−988.815	64.563
	900.00	129.260	214.846	139.345	−1126.999	67.951	−1320.361	−1189.784	−963.632	55.928
	1000.00	133.859	228.704	147.596	−1113.842	81.108	−1342.546	−1189.205	−938.541	49.024
	1100.00	138.371	241.675	155.565	−1100.230	94.720	−1366.072	−1189.062	−913.464	43.377
	1200.00	142.825	253.906	163.256	−1086.170	108.780	−1390.857	−1188.153	−888.467	38.674
	1300.00	147.237	265.512	170.679	−1071.666	123.284	−1416.832	−1185.209	−863.610	34.700
	1400.00	151.620	276.584	177.851	−1056.723	138.227	−1443.941	−1181.997	−838.991	31.303
	1413.00	152.188	277.988	178.766	−1054.748	140.202	−1447.546	−1181.560	−835.808	30.897

References

Phase	H / S	C_p	Remarks	
SOL	Tk1	e	La1	MPT= 1413.

203.777 IRON ORTHOSILICATE (FAYALITE) **Fe2SiO4**

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	132.899	145.197	145.197	–1479.902	0.000	–1523.193	–1479.902	–1378.985	241.593
	300.00	133.359	146.021	145.200	–1479.656	0.246	–1523.462	–1479.894	–1378.359	239.994
	400.00	150.902	187.069	150.678	–1465.345	14.557	–1540.173	–1478.900	–1344.638	175.592
	500.00	161.126	221.919	161.532	–1449.709	30.193	–1560.668	–1477.365	–1311.246	136.985
	600.00	168.468	251.973	174.159	–1433.214	46.688	–1584.397	–1475.741	–1278.175	111.275
	700.00	174.450	278.404	187.201	–1416.060	63.842	–1610.942	–1474.204	–1245.371	92.931
	800.00	179.708	302.048	200.104	–1398.347	81.555	–1639.985	–1472.907	–1212.773	79.186
	900.00	184.543	323.497	212.641	–1380.132	99.770	–1671.279	–1472.127	–1180.310	68.503
	1000.00	189.117	343.179	224.724	–1361.447	118.455	–1704.626	–1472.528	–1147.880	59.959
	1100.00	193.520	361.411	236.331	–1342.314	137.588	–1739.866	–1474.168	–1115.306	52.961
	1200.00	197.806	378.434	247.472	–1322.747	157.155	–1776.868	–1474.656	–1082.696	47.129
	1300.00	202.010	394.433	258.167	–1302.756	177.146	–1815.519	–1471.459	–1050.162	42.196
	1400.00	206.155	409.556	268.445	–1282.347	197.555	–1855.725	–1468.115	–1017.879	37.978
	1490.00	209.847	422.514	277.363	–1263.627	216.275	–1893.173	–1464.979	–989.033	34.672
			61.862		92.174					
LIQ	1490.00	240.580	484.376	277.363	–1171.453	308.449	–1893.173	–1372.805	–989.033	34.672
	1500.00	240.580	485.985	278.748	–1169.047	310.855	–1898.025	–1372.143	–986.459	34.352
	1600.00	240.580	501.512	292.191	–1144.989	334.913	–1947.408	–1365.674	–960.960	31.372
	1700.00	240.580	516.097	304.937	–1120.931	358.971	–1998.296	–1411.541	–935.372	28.740

References

Phase	H / S	C_p
SOL	Nb1	S5
LIQ	Tk1	S5

FeTiO3 IRON TITANIUM TRIOXIDE (ILMENITE) 151.725

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	99.502	105.855	105.855	−1235.535	0.000	−1267.096	−1235.535	−1158.045	202.885
	300.00	99.813	106.472	105.857	−1235.351	0.184	−1267.292	−1235.525	−1157.564	201.550
	400.00	111.379	136.971	109.937	−1224.721	10.814	−1279.510	−1234.567	−1131.703	147.785
	500.00	117.713	162.561	117.974	−1213.242	22.293	−1294.522	−1233.229	−1106.138	115.557
	600.00	121.986	184.420	127.272	−1201.246	34.289	−1311.898	−1231.845	−1080.851	94.096
	700.00	125.288	203.481	136.826	−1188.876	46.659	−1331.313	−1230.559	−1055.789	78.784
	800.00	128.070	220.397	146.235	−1176.205	59.330	−1352.523	−1229.481	−1030.898	67.311
	900.00	130.552	235.627	155.335	−1163.272	72.263	−1375.337	−1228.768	−1006.123	58.394
	1000.00	132.846	249.502	164.068	−1150.101	85.434	−1399.603	−1228.760	−981.394	51.263
	1100.00	135.018	262.266	172.423	−1136.707	98.828	−1425.200	−1229.486	−956.608	45.426
	1200.00	137.107	274.105	180.409	−1123.100	112.435	−1452.026	−1233.742	−931.690	40.555
	1300.00	139.137	285.159	188.046	−1109.288	126.247	−1479.995	−1231.734	−906.600	36.428
	1400.00	141.125	295.544	195.357	−1095.274	140.261	−1509.035	−1229.717	−881.665	32.895
	1500.00	143.081	305.347	202.366	−1081.064	154.471	−1539.084	−1227.697	−856.875	29.839
	1600.00	145.013	314.643	209.095	−1066.659	168.876	−1570.088	−1225.681	−832.219	27.169
	1658.00	146.125	319.826	212.879	−1058.216	177.319	−1588.488	−1224.517	−817.977	25.770
			54.761		90.793					
LIQ	1658.00	199.158	374.587	212.879	−967.423	268.112	−1588.488	−1133.724	−817.977	25.770
	1700.00	199.158	379.569	216.936	−959.058	276.477	−1604.326	−1131.625	−809.998	24.888
	1800.00	199.158	390.953	226.290	−939.142	296.393	−1642.857	−1124.847	−791.276	22.962
	1900.00	199.158	401.721	235.243	−919.226	316.309	−1682.496	−1132.381	−772.222	21.230
	2000.00	199.158	411.936	243.824	−899.311	336.224	−1723.183	−1140.403	−752.980	19.666

References

Phase	H / S	C_p
SOL	Tk1	Ku1
LIQ	Tk1	Ku1

223.572 DIIRON TITANIUM TETROXIDE **Fe2TiO4**

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	142.303	169.034	169.034	−1515.236	0.000	−1565.633	−1515.236	−1417.867	248.404
	300.00	142.617	169.915	169.036	−1514.972	0.264	−1565.947	−1515.220	−1417.262	246.767
	400.00	155.841	212.897	174.807	−1500.000	15.236	−1585.159	−1514.031	−1384.773	180.833
	500.00	165.352	248.733	186.107	−1483.923	31.313	−1608.289	−1512.476	−1352.635	141.309
	600.00	173.400	279.606	199.175	−1466.977	48.259	−1634.741	−1510.811	−1320.822	114.988
	700.00	180.758	306.895	212.651	−1449.265	65.971	−1664.092	−1509.139	−1289.290	96.208
	800.00	187.748	331.491	225.993	−1430.838	84.398	−1696.030	−1507.589	−1257.991	82.138
	900.00	194.524	353.997	238.983	−1411.723	103.513	−1730.320	−1506.429	−1226.867	71.206
	1000.00	201.167	374.837	251.538	−1391.937	123.299	−1766.774	−1506.314	−1195.825	62.464
	1100.00	207.723	394.318	263.642	−1371.492	143.744	−1805.242	−1507.293	−1164.697	55.307
	1200.00	214.220	412.671	275.304	−1350.395	164.841	−1845.601	−1510.962	−1133.483	49.339
	1300.00	220.676	430.073	286.545	−1328.650	186.586	−1887.745	−1506.256	−1102.214	44.288
	1400.00	227.101	446.663	297.394	−1306.261	208.975	−1931.588	−1501.197	−1071.322	39.972
	1500.00	233.504	462.549	307.879	−1283.230	232.006	−1977.054	−1495.788	−1040.803	36.244
	1600.00	239.890	477.823	318.026	−1259.560	255.676	−2024.078	−1490.035	−1010.657	32.995
	1663.00	243.907	487.165	324.257	−1244.321	270.915	−2054.476	−1486.238	−991.854	31.154

References

Phase	H / S	C_p	Remarks	
SOL	Tk1	Ku1	Tk1	MPT= 1663.

FeV2O4 IRON DIVANADIUM TETRAOXIDE 221.728

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	152.962	156.900	156.900	−1505.989	0.000	−1552.769	−1505.989	−1405.066	246.162
	300.00	153.373	157.847	156.903	−1505.706	0.283	−1553.060	−1505.953	−1404.440	244.535
	400.00	168.837	204.348	163.138	−1489.505	16.484	−1571.244	−1503.453	−1370.954	179.028
	500.00	177.527	243.029	175.360	−1472.154	33.835	−1593.669	−1500.395	−1338.177	139.798
	600.00	183.551	275.955	189.450	−1454.086	51.903	−1619.659	−1497.179	−1306.035	113.700
	700.00	188.316	304.618	203.899	−1435.485	70.504	−1648.718	−1493.968	−1274.433	95.099
	800.00	192.411	330.037	218.107	−1416.445	89.544	−1680.475	−1490.884	−1243.283	81.178
	900.00	196.115	352.917	231.836	−1397.016	108.973	−1714.641	−1488.107	−1212.504	70.372
	1000.00	199.577	373.760	245.001	−1377.230	128.759	−1750.990	−1486.018	−1182.003	61.741
	1100.00	202.881	392.938	257.590	−1357.106	148.883	−1789.338	−1484.665	−1151.653	54.687
	1200.00	206.076	410.729	269.619	−1336.657	169.332	−1829.532	−1482.865	−1121.477	48.817
	1300.00	209.196	427.347	281.120	−1315.893	190.096	−1871.445	−1479.364	−1091.504	43.857
	1400.00	212.261	442.963	292.128	−1294.820	211.169	−1914.968	−1475.945	−1061.797	39.616
	1500.00	215.285	457.711	302.679	−1273.442	232.547	−1960.008	−1472.622	−1032.332	35.949
	1600.00	218.278	471.700	312.810	−1251.764	254.225	−2006.485	−1469.411	−1003.085	32.747
	1700.00	221.248	485.023	322.551	−1229.787	276.202	−2054.326	−1467.278	−974.016	29.928
	1800.00	224.198	497.752	331.934	−1207.515	298.474	−2103.469	−1464.672	−945.076	27.425
	1900.00	227.134	509.953	340.984	−1184.948	321.041	−2153.859	−1476.321	−915.575	25.171
	2000.00	230.057	521.678	349.728	−1162.089	343.900	−2205.444	−1474.280	−886.115	23.143

References

Phase	H / S	C_p
SOL	K7	e

Fe2ZnO4 DIIRON ZINC TETRAOXIDE 241.082

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	142.972	151.670	151.670	−1171.579	0.000	−1216.799	−1171.579	−1065.791	186.722
	300.00	143.275	152.555	151.673	−1171.314	0.265	−1217.081	−1171.562	−1065.135	185.456
	400.00	155.500	195.607	157.460	−1156.320	15.259	−1234.563	−1170.343	−1029.828	134.482
	500.00	163.553	231.216	168.753	−1140.347	31.232	−1255.955	−1168.871	−994.869	103.933
	600.00	169.962	261.618	181.757	−1123.663	47.916	−1280.633	−1167.471	−960.202	83.593
	700.00	175.596	288.248	195.107	−1106.380	65.199	−1308.154	−1173.598	−925.679	69.075
	800.00	180.816	312.039	208.262	−1088.557	83.022	−1338.189	−1172.819	−890.318	58.132
	900.00	185.796	333.626	221.010	−1070.225	101.354	−1370.488	−1172.500	−855.032	49.625
	1000.00	190.627	353.453	233.276	−1051.403	120.176	−1404.855	−1173.291	−819.730	42.818

References

Phase	H / S	C_p
SOL	Nb1	e

81.044

PYRRHOTITE **Fe0.877S**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	49.876	60.794	60.794	−105.437	0.000	−123.563	−105.437	−106.872	18.724
	300.00	49.990	61.102	60.794	−105.345	0.092	−123.675	−105.427	−106.881	18.610
	400.00	56.179	76.331	62.829	−100.036	5.401	−130.569	−107.003	−107.366	14.021
	500.00	62.368	89.532	66.876	−94.109	11.328	−138.875	−107.479	−107.416	11.222
	598.00	68.434	101.222	71.560	−87.699	17.738	−148.230	−107.230	−107.413	9.382
			0.664		0.397					
SOL−B	598.00	58.170	101.886	71.560	−87.302	18.135	−148.230	−106.833	−107.413	9.382
	600.00	58.112	102.080	71.662	−87.186	18.251	−148.434	−106.841	−107.414	9.351
	700.00	55.576	110.837	76.653	−81.508	23.929	−159.094	−107.392	−107.472	8.020
	800.00	53.836	118.136	81.395	−76.044	29.393	−170.553	−108.460	−107.418	7.014
	900.00	52.914	124.423	85.834	−70.707	34.730	−182.688	−162.865	−106.043	6.155
	1000.00	51.993	129.951	89.975	−65.462	39.975	−195.412	−163.643	−99.697	5.208
	1100.00	55.396	135.063	93.843	−60.095	45.342	−208.664	−164.986	−93.222	4.427
	1200.00	59.112	140.040	97.486	−54.372	51.065	−222.421	−165.609	−86.685	3.773
	1300.00	62.676	144.907	100.947	−48.290	57.147	−236.669	−164.401	−80.155	3.221
	1400.00	67.195	149.711	104.259	−41.805	63.632	−251.400	−162.868	−73.730	2.751
	1500.00	72.676	154.528	107.450	−34.819	70.618	−266.611	−160.913	−67.428	2.348

References

Phase	H / S	C_p
SOL−A	Ja1	Ja1
SOL−B	Ja1	Ja1

FeS IRON MONOSULFIDE 87.913

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol		]	[−]
SOL−A	298.15	50.517	60.321	60.321	−101.671	0.000	−119.656	−101.671	−101.965	17.864
	300.00	50.671	60.634	60.322	−101.577	0.094	−119.768	−101.666	−101.967	17.754
	400.00	89.203	79.068	62.578	−95.075	6.596	−126.702	−102.371	−102.108	13.334
	411.00	95.051	81.568	63.052	−94.061	7.610	−127.586	−101.987	−102.106	12.977
			4.051		1.665					
SOL−B	411.00	72.358	85.619	63.052	−92.396	9.275	−127.586	−100.322	−102.106	12.977
	500.00	72.358	99.803	68.373	−85.956	15.715	−135.857	−100.006	−102.537	10.712
	598.00	72.358	112.753	74.616	−78.865	22.806	−146.292	−99.447	−103.080	9.004
			0.664		0.397					
SOL−C	598.00	62.085	113.417	74.616	−78.468	23.203	−146.292	−99.050	−103.080	9.004
	600.00	62.030	113.625	74.746	−78.344	23.327	−146.519	−99.058	−103.093	8.975
	700.00	59.808	123.007	80.992	−72.260	29.411	−158.365	−99.613	−103.728	7.740
	800.00	58.560	130.901	86.750	−66.350	35.321	−171.071	−100.679	−104.250	6.807
	900.00	58.286	137.773	92.045	−60.516	41.155	−184.511	−155.083	−103.452	6.004
	1000.00	58.986	143.942	96.931	−54.660	47.011	−198.602	−155.839	−97.684	5.102
	1100.00	60.662	149.635	101.466	−48.686	52.985	−213.284	−157.256	−91.784	4.358
	1200.00	63.311	155.019	105.706	−42.495	59.176	−228.519	−158.043	−85.815	3.735
	1300.00	66.935	160.224	109.701	−35.991	65.680	−244.282	−156.836	−79.843	3.208
	1400.00	71.533	165.346	113.493	−29.076	72.595	−260.561	−155.307	−73.975	2.760
	1463.00	74.930	168.568	115.795	−24.464	77.207	−271.079	−154.134	−70.340	2.511
			21.506		31.464					
LIQ	1463.00	62.551	190.074	115.795	7.000	108.671	−271.079	−122.670	−70.340	2.511
	1500.00	62.551	191.637	117.647	9.314	110.985	−278.141	−122.392	−69.020	2.404
	1600.00	62.551	195.674	122.398	15.569	117.240	−297.508	−121.699	−65.485	2.138
	1700.00	62.551	199.466	126.821	21.824	123.495	−317.267	−122.046	−61.972	1.904
	1800.00	62.551	203.041	130.957	28.079	129.750	−337.394	−121.864	−58.444	1.696
	1900.00	62.551	206.423	134.841	34.334	136.005	−357.869	−135.867	−54.222	1.491
	2000.00	62.551	209.631	138.501	40.590	142.261	−378.673	−136.099	−49.919	1.304
	2100.00	62.551	212.683	141.962	46.845	148.516	−399.790	−136.335	−45.604	1.134
	2200.00	62.551	215.593	145.243	53.100	154.771	−421.205	−136.574	−41.278	0.980
	2300.00	62.551	218.374	148.362	59.355	161.026	−442.904	−136.817	−36.941	0.839
	2400.00	62.551	221.036	151.335	65.610	167.281	−464.876	−137.064	−32.593	0.709
	2500.00	62.551	223.589	154.175	71.865	173.536	−487.108	−137.314	−28.235	0.590
	2600.00	62.551	226.043	156.892	78.120	179.791	−509.590	−137.568	−23.867	0.479
	2700.00	62.551	228.403	159.497	84.375	186.046	−532.313	−137.826	−19.489	0.377
	2800.00	62.551	230.678	161.999	90.630	192.301	−555.268	−138.087	−15.101	0.282
	2900.00	62.551	232.873	164.405	96.885	198.556	−578.446	−138.352	−10.704	0.193
	3000.00	62.551	234.994	166.723	103.141	204.812	−601.840	−138.620	−6.298	0.110

References

Phase	H / S	C_p
SOL−A	Ja2	Ja2
SOL−B	Ja2	Ja2
SOL−C	Ja2	Ja2
LIQ	Ja2	Ja2

87.913

IRON MONOSULFIDE (GAS) **FeS**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	34.002	252.344	252.344	370.767	0.000	295.531	370.767	313.222	−54.875
	300.00	34.033	252.554	252.345	370.830	0.063	295.064	370.742	312.865	−54.475
	400.00	35.332	262.541	253.697	374.304	3.537	269.288	367.009	293.883	−38.377
	500.00	36.085	270.513	256.290	377.878	7.111	242.622	363.828	275.943	−28.828
	600.00	36.554	277.136	259.228	381.512	10.745	215.230	360.798	258.655	−22.518
	700.00	36.870	282.797	262.201	385.184	14.417	187.227	357.831	241.864	−18.048
	800.00	37.095	287.735	265.090	388.883	18.116	158.695	354.554	225.515	−14.725
	900.00	37.266	292.115	267.854	392.601	21.834	129.698	298.034	210.758	−12.232
	1000.00	37.402	296.048	270.480	396.335	25.568	100.287	295.157	201.205	−10.510
	1100.00	37.515	299.619	272.969	400.081	29.314	70.501	291.510	192.001	−9.117
	1200.00	37.615	302.887	275.328	403.838	33.071	40.373	288.290	183.077	−7.969
	1300.00	37.707	305.902	277.566	407.604	36.837	9.932	286.759	174.371	−7.006
	1400.00	37.796	308.699	279.691	411.379	40.612	−20.800	285.148	165.786	−6.186
	1500.00	37.886	311.310	281.713	415.163	44.396	−51.802	283.457	157.318	−5.478
	1600.00	37.981	313.758	283.640	418.956	48.189	−83.057	281.688	148.966	−4.863
	1700.00	38.083	316.064	285.480	422.759	51.992	−114.549	278.890	140.746	−4.325
	1800.00	38.194	318.244	287.240	426.573	55.806	−146.265	276.630	132.685	−3.850
	1900.00	38.315	320.312	288.927	430.399	59.632	−178.194	260.197	125.453	−3.449
	2000.00	38.448	322.280	290.546	434.237	63.470	−210.324	257.548	118.430	−3.093
	2100.00	38.591	324.160	292.102	438.088	67.321	−242.647	254.909	111.539	−2.774
	2200.00	38.744	325.959	293.600	441.955	71.188	−275.154	252.281	104.774	−2.488
	2300.00	38.908	327.684	295.045	445.838	75.071	−307.836	249.666	98.127	−2.229
	2400.00	39.081	329.344	296.440	449.737	78.970	−340.688	247.063	91.595	−1.994
	2500.00	39.262	330.943	297.788	453.654	82.887	−373.703	244.475	85.170	−1.780
	2600.00	39.451	332.486	299.093	457.590	86.823	−406.875	241.901	78.849	−1.584
	2700.00	39.645	333.979	300.358	461.544	90.777	−440.199	239.343	72.626	−1.405
	2800.00	39.844	335.424	301.584	465.519	94.752	−473.669	236.802	66.498	−1.241
	2900.00	40.047	336.826	302.776	469.513	98.746	−507.282	234.276	60.460	−1.089
	3000.00	40.251	338.187	303.933	473.528	102.761	−541.033	231.768	54.509	−0.949

References

Phase	H / S	C_p
GAS	Ja2	Ja2

FeS2 IRON DISULFIDE 119.979

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	62.112	52.928	52.928	−171.544	0.000	−187.324	−171.544	−160.076	28.045
	300.00	62.300	53.312	52.929	−171.429	0.115	−187.423	−171.559	−160.005	27.859
	400.00	68.844	72.268	55.469	−164.824	6.720	−193.732	−176.743	−155.860	20.353
	500.00	72.049	88.006	60.449	−157.766	13.778	−201.769	−180.341	−150.267	15.698
	600.00	74.293	101.347	66.182	−150.445	21.099	−211.253	−183.260	−143.961	12.533
	700.00	76.315	112.952	72.052	−142.914	28.630	−221.980	−185.678	−137.219	10.239
	800.00	78.344	123.274	77.821	−135.182	36.362	−233.801	−188.281	−130.124	8.496
	900.00	80.407	132.621	83.399	−127.244	44.300	−246.603	−296.789	−120.375	6.986
	1000.00	82.449	141.199	88.755	−119.101	52.443	−260.299	−297.092	−100.765	5.263

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1	Ja1	NDPT= 906.

FeSO4 IRON SULFATE 151.911

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	100.549	120.959	120.959	−928.848	0.000	−964.912	−928.848	−824.892	144.518
	300.00	100.828	121.582	120.961	−928.662	0.186	−965.136	−928.859	−824.247	143.514
	400.00	116.846	152.808	125.109	−917.769	11.079	−978.892	−931.115	−789.251	103.066
	500.00	129.289	180.299	133.454	−905.425	23.423	−995.575	−931.644	−753.730	78.742
	600.00	137.993	204.687	143.334	−892.036	36.812	−1014.848	−931.238	−718.170	62.522
	700.00	144.233	226.452	153.682	−877.908	50.940	−1036.425	−930.258	−682.733	50.946
	800.00	148.898	246.031	164.022	−863.241	65.607	−1060.066	−929.241	−647.443	42.274
	900.00	152.536	263.786	174.136	−848.163	80.685	−1085.571	−981.212	−611.117	35.468
	1000.00	155.482	280.015	183.924	−832.757	96.091	−1112.772	−979.341	−570.104	29.779

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1	Ja1	NDPT= 944.

399.885

DIIRON TRISULFATE **Fe2(SO4)3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	264.954	307.524	307.524	−2582.992	0.000	−2674.680	−2582.992	−2262.753	396.425
	300.00	265.649	309.165	307.529	−2582.501	0.491	−2675.251	−2583.046	−2260.766	393.634
	400.00	306.743	391.236	318.439	−2553.873	29.119	−2710.368	−2591.241	−2152.763	281.122
	500.00	339.795	463.434	340.363	−2521.457	61.535	−2753.174	−2594.588	−2042.779	213.408
	600.00	363.376	527.592	366.324	−2486.231	96.761	−2802.787	−2595.224	−1932.311	168.223
	700.00	380.321	584.949	393.534	−2449.002	133.990	−2858.466	−2594.110	−1821.902	135.952
	800.00	392.797	636.588	420.742	−2410.315	172.677	−2919.586	−2592.757	−1711.682	111.761
	900.00	402.232	683.422	447.368	−2370.543	212.449	−2985.623	−2750.101	−1598.155	92.755
	1000.00	409.588	726.197	473.143	−2329.938	253.054	−3056.135	−2745.324	−1470.432	76.807
	1100.00	415.546	765.524	497.960	−2288.672	294.320	−3130.748	−2741.740	−1343.086	63.778
	1200.00	420.620	801.903	521.792	−2246.858	336.134	−3209.142	−2737.023	−1216.180	52.939
	1300.00	425.218	835.754	544.656	−2204.564	378.428	−3291.044	−2728.675	−1089.781	43.788
	1400.00	429.683	867.430	566.592	−2161.819	421.173	−3376.220	−2720.242	−964.028	35.968
	1500.00	434.314	897.231	587.651	−2118.621	464.371	−3464.468	−2711.704	−838.881	29.212

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1	Ja1	NDPT= 1451.

131.649

IRON 0.96−SELENIDE **FeSe0.96**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	54.762	69.203	69.203	−66.944	0.000	−87.577	−66.944	−67.348	11.799
	300.00	54.873	69.542	69.204	−66.843	0.101	−87.705	−66.934	−67.351	11.727
	400.00	59.512	86.016	71.419	−61.105	5.839	−95.512	−66.384	−67.573	8.824
	500.00	62.794	99.663	75.742	−54.983	11.961	−104.815	−71.572	−67.847	7.088
	600.00	65.542	111.360	80.726	−48.564	18.380	−115.380	−71.614	−67.098	5.841
	700.00	68.038	121.653	85.852	−41.883	25.061	−127.040	−71.637	−66.343	4.951
	730.80	68.777	124.598	87.423	−39.776	27.168	−130.833	−71.648	−66.110	4.725
			13.110		9.581					
SOL−B	730.80	59.039	137.709	87.423	−30.195	36.749	−130.833	−62.067	−66.110	4.725
	800.00	58.204	143.013	92.006	−26.139	40.805	−140.549	−62.883	−66.457	4.339
	900.00	60.835	149.985	98.066	−20.217	46.727	−155.203	−64.366	−66.817	3.878
	1000.00	67.028	156.684	103.593	−13.853	53.091	−170.537	−66.153	−66.997	3.500

References

Phase	H / S	C_p	Remarks	
SOL−A	Mi1	Mi1	Mi1	TPT= 730.8
SOL−B	Mi1	Mi1,e		

FeSi

IRON SILICON

83.932

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	45.162	44.685	44.685	−78.852	0.000	−92.175	−78.852	−78.430	13.741
	300.00	45.203	44.965	44.686	−78.768	0.084	−92.258	−78.852	−78.428	13.655
	400.00	47.379	58.267	46.485	−74.139	4.713	−97.446	−78.971	−78.274	10.222
	500.00	49.555	69.073	49.954	−69.293	9.559	−103.829	−79.255	−78.070	8.156
	600.00	51.731	78.300	53.927	−64.228	14.624	−111.208	−79.656	−77.797	6.773
	700.00	53.907	86.438	58.001	−58.946	19.906	−119.453	−80.152	−77.449	5.779
	800.00	56.082	93.778	62.022	−53.447	25.405	−128.469	−80.777	−77.023	5.029
	900.00	58.258	100.509	65.929	−47.730	31.122	−138.188	−81.653	−76.504	4.440
	1000.00	60.434	106.760	69.703	−41.795	37.057	−148.555	−83.104	−75.862	3.963
	1100.00	62.610	112.622	73.341	−35.643	43.209	−159.527	−85.157	−75.023	3.563
	1200.00	64.785	118.163	76.847	−29.273	49.579	−171.069	−86.615	−74.055	3.224
	1300.00	66.961	123.434	80.230	−22.686	56.166	−183.151	−86.213	−73.025	2.934
	1400.00	69.137	128.476	83.497	−15.881	62.971	−195.748	−85.719	−72.028	2.687
	1500.00	71.312	133.321	86.658	−8.859	69.993	−208.840	−85.132	−71.070	2.475
	1600.00	73.488	137.992	89.722	−1.619	77.233	−222.407	−84.452	−70.154	2.290
	1683.00	75.294	141.754	92.195	4.556	83.408	−234.017	−84.712	−69.419	2.155
			41.865		70.459					
LIQ	1683.00	83.680	183.619	92.195	75.015	153.867	−234.017	−14.253	−69.419	2.155
	1700.00	83.680	184.460	93.114	76.437	155.289	−237.145	−64.208	−69.530	2.136
	1800.00	83.680	189.243	98.323	84.805	163.657	−255.833	−62.757	−69.886	2.028
	1900.00	83.680	193.768	103.228	93.173	172.025	−274.985	−75.486	−69.618	1.914
	2000.00	83.680	198.060	107.863	101.541	180.393	−294.579	−74.440	−69.336	1.811

References

Phase	H / S	C_p
SOL	Hu1	Hu1
LIQ	Hu1	Hu1

FeSi2

LEBOITE (BETA)

112.018

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	64.165	55.601	55.601	−81.199	0.000	−97.776	−81.199	−78.421	13.739
	300.00	64.218	55.998	55.602	−81.080	0.119	−97.880	−81.201	−78.404	13.651
	400.00	67.113	74.869	58.156	−74.514	6.685	−104.461	−81.505	−77.435	10.112
	500.00	70.021	90.157	63.073	−67.657	13.542	−112.736	−82.058	−76.357	7.977
	600.00	72.934	103.181	68.698	−60.509	20.690	−122.418	−82.752	−75.154	6.543
	700.00	75.849	114.642	74.458	−53.070	28.129	−133.320	−83.540	−73.827	5.509
	800.00	78.766	124.961	80.137	−45.340	35.859	−145.308	−84.442	−72.379	4.726
	900.00	81.684	134.407	85.649	−37.317	43.882	−158.283	−85.574	−70.807	4.110

References

Phase	H / S	C_p	Remarks	
SOL	Hu1	Hu1	Hu1	DPT= 1243.

121.286

LEBOITE (ALPHA) **FeSi2.33**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol		]	[−]
SOL−A	298.15	71.455	69.500	69.500	−58.999	0.000	−79.721	−58.999	−58.513	10.251
	300.00	71.632	69.943	69.502	−58.867	0.132	−79.850	−58.999	−58.510	10.188
	400.00	79.016	91.644	72.411	−51.306	7.693	−87.963	−59.010	−58.345	7.619
	500.00	84.247	109.861	78.127	−43.132	15.867	−98.063	−58.998	−58.180	6.078
	600.00	88.631	125.617	84.758	−34.484	24.515	−109.854	−58.975	−58.019	5.051
	700.00	92.614	139.582	91.611	−25.419	33.580	−123.127	−58.946	−57.862	4.318
	800.00	96.384	152.197	98.408	−15.968	43.031	−137.725	−58.955	−57.707	3.768
	900.00	100.031	163.761	105.036	−6.146	52.853	−153.531	−59.133	−57.543	3.340

References

Phase	H / S	C_p	Remarks
SOL−A	Nb1	e	Hu1 stable at 1184. to 1490. K

292.642

2−IRON TANTALUM **Fe2Ta**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol		]	[−]
SOL	298.15	74.803	106.692	106.692	−57.739	0.000	−89.549	−57.739	−60.908	10.671
	300.00	74.852	107.155	106.693	−57.601	0.138	−89.747	−57.740	−60.927	10.608
	400.00	77.488	129.049	109.661	−49.984	7.755	−101.603	−57.951	−61.965	8.092
	500.00	80.124	146.623	115.351	−42.103	15.636	−115.415	−58.391	−62.922	6.573
	600.00	82.760	161.465	121.831	−33.959	23.780	−130.838	−59.061	−63.769	5.552
	700.00	85.395	174.420	128.437	−25.551	32.188	−147.645	−59.974	−64.486	4.812
	800.00	88.031	185.995	134.921	−16.880	40.859	−165.676	−61.222	−65.050	4.247
	900.00	90.667	196.516	141.189	−7.945	49.794	−184.809	−63.063	−65.426	3.797
	1000.00	93.303	206.205	147.212	1.254	58.993	−204.951	−66.153	−65.539	3.423
	1100.00	95.939	215.221	152.990	10.716	68.455	−226.028	−70.552	−65.235	3.098
	1200.00	98.575	223.682	158.532	20.441	78.180	−247.977	−73.870	−64.642	2.814
	1300.00	101.211	231.677	163.854	30.431	88.170	−270.749	−73.586	−63.884	2.567

References

Phase	H / S	C_p
SOL	Ge1	Ge1

FeTe0.9

IRON 0.9–TELLURIDE

170.687

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL–B	298.15	49.665	80.082	80.082	–23.221	0.000	–47.097	–23.221	–25.682	4.499
	300.00	49.728	80.389	80.083	–23.129	0.092	–47.246	–23.218	–25.698	4.474
	400.00	52.075	95.056	82.067	–18.025	5.196	–56.048	–23.157	–26.538	3.466
	500.00	53.388	106.828	85.881	–12.747	10.474	–66.161	–23.347	–27.368	2.859
	600.00	54.295	116.646	90.213	–7.361	15.860	–77.349	–23.863	–28.130	2.449
	700.00	55.010	125.071	94.605	–1.894	21.327	–89.444	–24.739	–28.777	2.147
	800.00	55.622	132.458	98.884	3.638	26.859	–102.328	–41.895	–27.579	1.801
	900.00	56.175	139.041	102.987	9.228	32.449	–115.909	–43.725	–25.684	1.491
	1000.00	56.691	144.987	106.894	14.872	38.093	–130.115	–46.247	–23.553	1.230
	1100.00	57.182	150.413	110.608	20.565	43.786	–144.889	–49.492	–21.112	1.003
	1200.00	57.658	155.409	114.136	26.308	49.529	–160.184	–52.268	–18.429	0.802

References

Phase	H / S	C_p	Remarks	
SOL–B	Mi1	Mi1	Mi1	MPT= 1200.

FeTe2

IRON DITELLURIDE

311.047

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL–E	298.15	73.728	100.165	100.165	–72.383	0.000	–102.247	–72.383	–64.599	11.317
	300.00	73.824	100.621	100.166	–72.247	0.136	–102.433	–72.388	–64.551	11.239
	400.00	77.917	122.462	103.117	–64.645	7.738	–113.630	–72.783	–61.886	8.081
	500.00	80.915	140.182	108.812	–56.698	15.685	–126.789	–73.501	–59.086	6.173
	600.00	83.483	155.166	115.321	–48.476	23.907	–141.575	–74.621	–56.105	4.884
	700.00	85.847	168.214	121.964	–40.008	32.375	–157.758	–76.178	–52.902	3.948
	800.00	88.103	179.826	128.484	–31.310	41.073	–175.171	–113.478	–45.683	2.983
	900.00	90.295	190.330	134.782	–22.390	49.993	–193.686	–116.121	–37.053	2.151
	933.00	91.009	193.594	136.804	–19.398	52.985	–200.021	–117.088	–34.137	1.911

References

Phase	H / S	C_p	Remarks	
SOL–E	Mi1	Mi1	Mi1	MPT= 933.

103.727 IRON TITANIUM **FeTi**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	46.749	52.718	52.718	−40.585	0.000	−56.303	−40.585	−38.999	6.832
	300.00	46.879	53.008	52.719	−40.498	0.087	−56.401	−40.591	−38.989	6.789
	400.00	51.787	67.248	54.627	−35.537	5.048	−62.436	−40.845	−38.413	5.016
	500.00	54.576	79.126	58.373	−30.209	10.376	−69.772	−41.069	−37.781	3.947
	600.00	56.530	89.257	62.697	−24.649	15.936	−78.203	−41.382	−37.096	3.229
	700.00	58.091	98.092	67.136	−18.915	21.670	−87.580	−41.850	−36.347	2.712
	800.00	59.442	105.939	71.505	−13.037	27.548	−97.789	−42.560	−35.516	2.319
	900.00	60.670	113.012	75.730	−7.031	33.554	−108.742	−43.666	−34.574	2.007
	1000.00	61.823	119.465	79.786	−0.906	39.679	−120.371	−45.511	−33.474	1.749
	1100.00	62.926	125.409	83.667	5.332	45.917	−132.618	−48.129	−32.130	1.526
	1200.00	63.995	130.931	87.378	11.678	52.263	−145.438	−54.322	−30.479	1.327
	1300.00	65.041	136.094	90.929	18.130	58.715	−158.792	−54.300	−28.493	1.145
	1400.00	66.070	140.952	94.330	24.686	65.271	−172.647	−54.321	−26.507	0.989
	1500.00	67.085	145.545	97.593	31.344	71.929	−186.974	−54.392	−24.518	0.854
	1590.00	67.991	149.480	100.419	37.422	78.007	−200.252	−54.506	−22.723	0.746

References

Phase	H / S	C_p	Remarks
SOL	Ku1	e	Tk1 DPT= 1590. (LIQ + TiFe2)

Fe2U — 2–IRON URANIUM — 349.723

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	78.605	104.600	104.600	–32.217	0.000	–63.403	–32.217	–32.142	5.631
	300.00	78.659	105.086	104.602	–32.072	0.145	–63.597	–32.215	–32.142	5.596
	400.00	81.588	128.116	107.722	–24.059	8.158	–75.306	–32.323	–32.111	4.193
	500.00	84.517	146.637	113.711	–15.754	16.463	–89.072	–32.804	–32.010	3.344
	600.00	87.446	162.305	120.536	–7.156	25.061	–104.539	–33.717	–31.773	2.766
	700.00	90.374	176.005	127.502	1.735	33.952	–121.468	–35.119	–31.346	2.339
	800.00	93.303	188.264	134.344	10.919	43.136	–139.692	–37.153	–30.677	2.003
	900.00	96.232	199.422	140.964	20.396	52.613	–159.084	–40.129	–29.701	1.724
	1000.00	99.161	209.713	147.330	30.165	62.382	–179.547	–47.164	–28.151	1.470
	1100.00	102.090	219.301	153.442	40.228	72.445	–201.003	–57.009	–25.731	1.222
	1200.00	105.018	228.310	159.310	50.583	82.800	–223.388	–60.740	–22.759	0.991
	1300.00	107.947	236.831	164.948	61.232	93.449	–246.649	–60.806	–19.590	0.787
	1400.00	110.876	244.938	170.374	72.173	104.390	–270.741	–60.748	–16.421	0.613
	1500.00	113.805	252.688	175.605	83.407	115.624	–295.625	–69.997	–12.654	0.441
	1508.00	114.039	253.294	176.016	84.318	116.535	–297.649	–70.054	–12.348	0.428
			44.948		67.781					
LIQ	1508.00	138.072	298.242	176.016	152.099	184.316	–297.649	–2.273	–12.348	0.428
	1600.00	138.072	306.418	183.281	164.802	197.019	–325.467	–0.781	–13.008	0.425

References

Phase	H / S	C_p
SOL	Ku1	e
LIQ	Ku1	e

Fe(VO3)2 — IRON VANADATE — 253.726

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	196.664	188.280	188.280	–1900.373	0.000	–1956.509	–1900.373	–1747.642	306.180
	300.00	197.075	189.498	188.284	–1900.009	0.364	–1956.858	–1900.310	–1746.694	304.126
	400.00	212.539	248.570	196.233	–1879.438	20.935	–1978.866	–1896.412	–1696.053	221.482
	500.00	221.229	297.003	211.692	–1857.717	42.656	–2006.219	–1892.042	–1646.465	172.005
	600.00	227.253	337.897	229.406	–1835.279	65.094	–2038.017	–1887.615	–1597.767	139.098
	700.00	232.018	373.297	247.490	–1812.308	88.065	–2073.616	–1883.288	–1549.803	115.648
	800.00	236.113	404.552	265.207	–1788.897	111.476	–2112.538	–1879.172	–1502.446	98.100
	900.00	239.817	432.579	282.273	–1765.098	135.275	–2154.419	–1875.430	–1455.585	84.480
	1000.00	243.279	458.027	298.595	–1740.942	159.431	–2198.968	–1872.433	–1409.106	73.604
	1023.00	244.050	463.567	302.242	–1735.337	165.036	–2209.567	–1871.968	–1398.455	71.405

References

Phase	H / S	C_p	Remarks	
SOL	Tk1	e	Tk1	DPT= 1023. (FeVO4 + Fe2O3)

303.695

IRON TUNGSTATE

FeWO4

Phase	T	C_p	S	-(G-H298)/T	H	H-H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[-]
SOL	298.15	114.725	131.796	131.796	-1184.490	0.000	-1223.785	-1184.490	-1083.585	189.840
	300.00	114.832	132.506	131.798	-1184.278	0.212	-1224.029	-1184.478	-1082.959	188.560
	400.00	119.873	166.260	136.366	-1172.533	11.957	-1239.037	-1183.766	-1049.224	137.015
	500.00	124.181	193.479	145.152	-1160.326	24.164	-1257.066	-1183.045	-1015.673	106.107
	600.00	128.201	216.478	155.171	-1147.706	36.784	-1277.593	-1182.389	-982.262	85.513
	700.00	132.086	236.533	165.391	-1134.691	49.799	-1300.264	-1181.813	-948.954	70.812
	800.00	135.898	254.420	175.422	-1121.291	63.199	-1324.827	-1181.348	-915.722	59.791
	900.00	139.667	270.645	185.114	-1107.513	76.977	-1351.093	-1181.101	-882.537	51.221
	1000.00	143.411	285.554	194.423	-1093.358	91.132	-1378.913	-1181.381	-849.355	44.366
	1100.00	147.137	299.398	203.344	-1078.831	105.659	-1408.168	-1182.201	-816.097	38.753
	1200.00	150.852	312.360	211.894	-1063.931	120.559	-1438.763	-1182.352	-782.825	34.075
	1300.00	154.558	324.581	220.097	-1048.661	135.829	-1470.615	-1180.561	-749.603	30.119
	1400.00	158.259	336.170	227.977	-1033.020	151.470	-1503.658	-1178.590	-716.525	26.734
	1500.00	161.955	347.215	235.561	-1017.009	167.481	-1537.831	-1176.435	-683.594	23.805

References

Phase	H / S	C_p
SOL	Ku1,Tk1	Tk1,e

Ga GALLIUM 69.723

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	26.152	40.828	40.828	0.000	0.000	−12.173	0.000	0.000	0.000
	300.00	26.635	40.991	40.828	0.049	0.049	−12.248	0.000	0.000	0.000
	302.80	27.365	41.242	40.831	0.124	0.124	−12.364	0.000	0.000	0.000
			18.418		5.577					
LIQ	302.80	28.468	59.660	40.831	5.701	5.701	−12.364	0.000	0.000	0.000
	400.00	27.244	67.395	46.396	8.399	8.399	−18.559	0.000	0.000	0.000
	500.00	26.775	73.415	51.222	11.096	11.096	−25.611	0.000	0.000	0.000
	600.00	26.624	78.280	55.339	13.765	13.765	−33.203	0.000	0.000	0.000
	700.00	26.624	82.383	58.917	16.426	16.426	−41.242	0.000	0.000	0.000
	800.00	26.568	85.930	62.077	19.083	19.083	−49.661	0.000	0.000	0.000
	900.00	26.568	89.060	64.904	21.740	21.740	−58.414	0.000	0.000	0.000
	1000.00	26.568	91.859	67.462	24.397	24.397	−67.462	0.000	0.000	0.000
	1100.00	26.568	94.391	69.797	27.053	27.053	−76.777	0.000	0.000	0.000
	1200.00	26.568	96.703	71.944	29.710	29.710	−86.333	0.000	0.000	0.000
	1300.00	26.568	98.830	73.932	32.367	32.367	−96.111	0.000	0.000	0.000
	1400.00	26.568	100.799	75.781	35.024	35.024	−106.094	0.000	0.000	0.000
	1500.00	26.568	102.632	77.511	37.681	37.681	−116.266	0.000	0.000	0.000
	1600.00	26.568	104.346	79.135	40.338	40.338	−126.616	0.000	0.000	0.000
	1700.00	26.568	105.957	80.666	42.995	42.995	−137.132	0.000	0.000	0.000
	1800.00	26.568	107.476	82.114	45.651	45.651	−147.805	0.000	0.000	0.000
	1900.00	26.568	108.912	83.487	48.308	48.308	−158.625	0.000	0.000	0.000
	2000.00	26.568	110.275	84.792	50.965	50.965	−169.585	0.000	0.000	0.000
	2100.00	26.568	111.571	86.037	53.622	53.622	−180.677	0.000	0.000	0.000
	2200.00	26.568	112.807	87.226	56.279	56.279	−191.897	0.000	0.000	0.000
	2300.00	26.568	113.988	88.364	58.936	58.936	−203.237	0.000	0.000	0.000
	2400.00	26.568	115.119	89.455	61.592	61.592	−214.693	0.000	0.000	0.000
	2475.00	26.568	115.936	90.245	63.585	63.585	−223.357	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks	
SOL	Hu1	Hu1		
LIQ	Hu1	Hu1	Hu1	BPT= 2475., L= 258.7 kJ

69.723

GALLIUM (GAS) **Ga**[g]

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[–]
GAS	298.15	25.333	169.038	169.038	271.960	0.000	221.561	271.960	233.734	–40.949
	300.00	25.391	169.195	169.039	272.007	0.047	221.248	271.958	233.497	–40.655
	400.00	26.972	176.776	170.062	274.646	2.686	203.935	266.247	222.494	–29.055
	500.00	26.992	182.814	172.031	277.352	5.392	185.945	266.255	211.556	–22.101
	600.00	26.348	187.686	174.248	280.023	8.063	167.411	266.258	200.615	–17.465
	700.00	25.492	191.684	176.462	282.615	10.655	148.437	266.189	189.678	–14.154
	800.00	24.719	195.036	178.580	285.124	13.164	129.096	266.042	178.757	–11.672
	900.00	24.077	197.909	180.572	287.563	15.603	109.445	265.823	167.859	–9.742
	1000.00	23.556	200.418	182.434	289.944	17.984	89.526	265.547	156.989	–8.200
	1100.00	23.136	202.642	184.172	292.278	20.318	69.371	265.224	146.148	–6.940
	1200.00	22.796	204.640	185.796	294.574	22.614	49.005	264.863	135.339	–5.891
	1300.00	22.518	206.454	187.316	296.839	24.879	28.449	264.472	124.561	–5.005
	1400.00	22.290	208.114	188.743	299.079	27.119	7.720	264.055	113.814	–4.246
	1500.00	22.101	209.645	190.086	301.298	29.338	–13.169	263.617	103.097	–3.590
	1600.00	21.943	211.066	191.353	303.500	31.540	–34.206	263.163	92.411	–3.017
	1700.00	21.811	212.392	192.552	305.688	33.728	–55.379	262.693	81.753	–2.512
	1800.00	21.700	213.636	193.690	307.863	35.903	–76.681	262.212	71.123	–2.064
	1900.00	21.605	214.806	194.771	310.028	38.068	–98.104	261.720	60.521	–1.664
	2000.00	21.524	215.912	195.800	312.185	40.225	–119.640	261.220	49.944	–1.304
	2100.00	21.454	216.961	196.783	314.333	42.373	–141.285	260.712	39.393	–0.980
	2200.00	21.395	217.958	197.723	316.476	44.516	–163.031	260.197	28.866	–0.685
	2300.00	21.343	218.907	198.624	318.613	46.653	–184.874	259.677	18.362	–0.417
	2400.00	21.298	219.815	199.488	320.745	48.785	–206.811	259.152	7.882	–0.172
	2500.00	21.259	220.683	200.318	322.872	50.912	–228.836	0.000	0.000	0.000
	2600.00	21.225	221.517	201.118	324.997	53.037	–250.946	0.000	0.000	0.000
	2700.00	21.195	222.317	201.888	327.118	55.158	–273.138	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1

GaAs — GALLIUM ARSENIDE — 144.645

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	46.858	64.183	64.183	−74.057	0.000	−93.193	−74.057	−70.374	12.329
	300.00	46.869	64.472	64.183	−73.970	0.087	−93.312	−74.065	−70.352	12.249
	400.00	47.476	78.039	66.029	−69.253	4.804	−100.469	−80.204	−67.236	8.780
	500.00	48.083	88.698	69.534	−64.475	9.582	−108.824	−80.690	−63.937	6.679
	600.00	48.689	97.518	73.484	−59.637	14.420	−118.147	−81.142	−60.544	5.271
	700.00	49.296	105.069	77.470	−54.737	19.320	−128.286	−81.582	−57.076	4.259
	800.00	49.903	111.691	81.342	−49.777	24.280	−139.130	−82.011	−53.545	3.496
	900.00	50.509	117.604	85.048	−44.757	29.300	−150.600	−82.430	−49.962	2.900
	1000.00	51.116	122.957	88.576	−39.676	34.381	−162.633	−82.816	−46.333	2.420
	1100.00	51.723	127.857	91.927	−34.534	39.523	−175.177	−83.168	−42.668	2.026
	1200.00	52.329	132.384	95.112	−29.331	44.726	−188.192	−83.573	−38.969	1.696
	1300.00	52.936	136.596	98.143	−24.068	49.989	−201.643	−84.204	−35.229	1.416
	1400.00	53.543	140.542	101.032	−18.744	55.313	−215.502	−85.315	−31.424	1.172
	1500.00	54.149	144.256	103.791	−13.359	60.698	−229.744	−183.704	−21.087	0.734
	1511.00	54.216	144.652	104.087	−12.763	61.294	−231.333	−183.605	−19.895	0.688
			58.150		87.864					
LIQ	1511.00	58.994	202.802	104.087	75.101	149.158	−231.333	−95.741	−19.895	0.688
	1600.00	58.994	206.178	109.673	80.351	154.408	−249.534	−94.518	−15.463	0.505

References

Phase	H / S	C_p
SOL	Tk1	Ku1,e
LIQ	Tk1	Ku1

GaAsO4 — GALLIUM ARSENATE — 208.642

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	118.258	150.122	150.122	−1002.235	0.000	−1046.994	−1002.235	−901.846	158.000
	300.00	118.582	150.854	150.124	−1002.016	0.219	−1047.272	−1002.219	−901.223	156.917
	400.00	131.190	186.884	154.951	−989.462	12.773	−1064.215	−1006.464	−865.937	113.080
	500.00	138.871	217.036	164.436	−975.935	26.300	−1084.453	−1004.319	−831.042	86.818
	600.00	144.613	242.882	175.408	−961.750	40.485	−1107.480	−1001.744	−796.623	69.352
	700.00	149.438	265.545	186.699	−947.043	55.192	−1132.924	−998.885	−762.659	56.910
	800.00	153.776	285.787	197.842	−931.879	70.356	−1160.508	−995.784	−729.121	47.607
	859.00	156.194	296.815	204.264	−922.734	79.501	−1177.698	−993.846	−709.524	43.145

References

Phase	H / S	C_p
SOL	G1	G1

309.435

GALLIUM BROMIDE **GaBr3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	101.654	179.912	179.912	−386.602	0.000	−440.243	−386.602	−359.998	63.070
	300.00	101.797	180.541	179.914	−386.414	0.188	−440.576	−386.673	−359.833	62.652
	396.00	109.228	209.787	183.733	−376.285	10.317	−459.360	−436.288	−340.881	44.964
			29.583		11.715					
LIQ	396.00	125.520	239.370	183.733	−364.570	22.032	−459.360	−424.573	−340.881	44.964
	400.00	125.520	240.632	184.296	−364.068	22.534	−460.320	−424.400	−340.037	44.404
	500.00	125.520	268.641	198.468	−351.516	35.086	−485.836	−420.083	−319.446	33.372
	600.00	125.520	291.526	212.129	−338.964	47.638	−513.879	−415.777	−299.723	26.093

References

Phase	H / S	C_p
SOL	Ku1/e	e
LIQ	e	e

105.176

GALLIUM MONOCHLORIDE (GAS) **GaCl**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	35.735	240.250	240.250	−70.542	0.000	−142.173	−70.542	−96.739	16.948
	300.00	35.763	240.471	240.251	−70.476	0.066	−142.617	−70.556	−96.901	16.872
	400.00	36.741	250.914	241.668	−66.844	3.698	−167.209	−77.008	−103.757	13.549
	500.00	37.194	259.167	244.371	−63.144	7.398	−192.728	−77.791	−110.353	11.528
	600.00	37.440	265.972	247.421	−59.412	11.130	−218.995	−78.544	−116.794	10.168
	700.00	37.588	271.755	250.494	−55.660	14.882	−245.888	−79.292	−123.110	9.187
	800.00	37.685	276.781	253.473	−51.896	18.646	−273.320	−80.038	−129.319	8.444
	900.00	37.751	281.224	256.314	−48.124	22.418	−301.225	−80.785	−135.434	7.860
	1000.00	37.798	285.204	259.008	−44.346	26.196	−329.550	−81.535	−141.466	7.389
	1100.00	37.833	288.808	261.556	−40.564	29.978	−358.253	−82.287	−147.423	7.001
	1200.00	37.859	292.101	263.966	−36.780	33.762	−387.301	−83.041	−153.311	6.673
	1300.00	37.880	295.132	266.248	−32.993	37.549	−416.665	−83.798	−159.136	6.394
	1400.00	37.896	297.940	268.413	−29.204	41.338	−446.320	−84.556	−164.903	6.153
	1500.00	37.910	300.555	270.469	−25.414	45.128	−476.246	−85.317	−170.616	5.941
	1600.00	37.920	303.002	272.427	−21.622	48.920	−506.425	−86.081	−176.277	5.755
	1700.00	37.929	305.301	274.294	−17.830	52.712	−536.842	−86.846	−181.891	5.589
	1800.00	37.937	307.469	276.077	−14.036	56.506	−567.481	−87.615	−187.460	5.440
	1900.00	37.943	309.521	277.784	−10.242	60.300	−598.332	−88.387	−192.986	5.306
	2000.00	37.949	311.467	279.420	−6.448	64.094	−629.382	−89.161	−198.471	5.184

References

Phase	H / S	C_p
GAS	Pa2	e

$GaCl_2$[g] GALLIUM DICHLORIDE (GAS) 140.628

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	53.134	301.023	301.023	−241.249	0.000	−330.999	−241.249	−252.304	44.203
	300.00	53.191	301.352	301.024	−241.151	0.098	−331.556	−241.262	−252.373	43.942
	400.00	55.216	316.972	303.140	−235.716	5.533	−362.505	−247.645	−254.160	33.190
	500.00	56.176	329.407	307.192	−230.141	11.108	−394.845	−248.339	−255.707	26.713
	600.00	56.718	339.701	311.777	−224.495	16.754	−428.315	−248.995	−257.118	22.384
	700.00	57.061	348.472	316.408	−218.804	22.445	−462.735	−249.643	−258.421	19.284
	800.00	57.300	356.108	320.904	−213.086	28.163	−497.972	−250.287	−259.631	16.952
	900.00	57.477	362.868	325.198	−207.346	33.903	−533.927	−250.930	−260.760	15.134
	1000.00	57.616	368.931	329.274	−201.592	39.657	−570.523	−251.573	−261.818	13.676
	1100.00	57.730	374.428	333.132	−195.824	45.425	−607.695	−252.216	−262.811	12.480
	1200.00	57.828	379.455	336.786	−190.046	51.203	−645.392	−252.859	−263.746	11.481
	1300.00	57.913	384.088	340.249	−184.259	56.990	−683.573	−253.502	−264.627	10.633
	1400.00	57.990	388.382	343.536	−178.464	62.785	−722.199	−254.144	−265.459	9.904
	1500.00	58.060	392.386	346.660	−172.661	68.588	−761.239	−254.787	−266.245	9.271
	1600.00	58.126	396.135	349.636	−166.852	74.397	−800.667	−255.431	−266.987	8.716
	1700.00	58.187	399.660	352.476	−161.036	80.213	−840.459	−256.075	−267.690	8.225
	1800.00	58.246	402.988	355.191	−155.214	86.035	−880.593	−256.721	−268.354	7.787
	1900.00	58.302	406.139	357.790	−149.387	91.862	−921.051	−257.368	−268.983	7.395
	2000.00	58.357	409.131	360.283	−143.554	97.695	−961.815	−258.016	−269.578	7.041

References

Phase	H / S	C_p
GAS	Pa2	Pa2

$GaCl_3$ GALLIUM CHLORIDE 176.081

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	118.407	135.143	135.143	−524.674	0.000	−564.967	−524.674	−453.011	79.366
	300.00	118.407	135.876	135.145	−524.455	0.219	−565.218	−524.598	−452.566	78.799
	351.00	118.407	154.466	136.637	−518.416	6.258	−572.634	−528.192	−439.594	65.419
			32.781		11.506					
LIQ	351.00	128.030	187.247	136.637	−506.910	17.764	−572.634	−516.686	−439.594	65.419
	400.00	128.030	203.977	143.884	−500.637	24.037	−582.228	−514.331	−428.989	56.020
	500.00	128.030	232.547	158.866	−487.834	36.840	−604.107	−509.581	−408.205	42.645

References

Phase	H / S	C_p
SOL	Tk1/e	e
LIQ	Tk1	e

176.081

GALLIUM CHLORIDE (GAS) **GaCl3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	74.934	325.148	325.148	−431.580	0.000	−528.523	−431.580	−416.567	72.981
	300.00	75.028	325.612	325.149	−431.441	0.139	−529.125	−431.584	−416.474	72.514
	400.00	78.361	347.720	328.141	−423.748	7.832	−562.836	−437.443	−409.598	53.488
	500.00	79.928	365.393	333.884	−415.825	15.755	−598.522	−437.573	−402.620	42.061
	600.00	80.799	380.049	340.392	−407.785	23.795	−635.815	−437.654	−395.621	34.442
	700.00	81.342	392.548	346.972	−399.676	31.904	−674.460	−437.722	−388.610	28.998
	800.00	81.710	403.436	353.364	−391.523	40.057	−714.271	−437.783	−381.590	24.915
	900.00	81.976	413.076	359.473	−383.338	48.242	−755.106	−437.843	−374.562	21.739
	1000.00	82.179	421.724	365.273	−375.130	56.450	−796.853	−437.904	−367.527	19.198
	1100.00	82.341	429.564	370.767	−366.903	64.677	−839.424	−437.965	−360.487	17.118
	1200.00	82.475	436.735	375.970	−358.662	72.918	−882.744	−438.027	−353.441	15.385
	1300.00	82.588	443.341	380.901	−350.409	81.171	−926.752	−438.090	−346.389	13.918
	1400.00	82.688	449.465	385.583	−342.145	89.435	−971.396	−438.154	−339.333	12.661
	1500.00	82.777	455.173	390.034	−333.872	97.708	−1016.631	−438.221	−332.272	11.571
	1600.00	82.858	460.518	394.274	−325.590	105.990	−1062.418	−438.290	−325.206	10.617
	1700.00	82.932	465.543	398.320	−317.300	114.280	−1108.724	−438.362	−318.137	9.775
	1800.00	83.002	470.285	402.188	−309.004	122.576	−1155.518	−438.437	−311.062	9.027
	1900.00	83.067	474.775	405.891	−300.700	130.880	−1202.773	−438.517	−303.984	8.357
	2000.00	83.130	479.037	409.442	−292.390	139.190	−1250.465	−438.601	−296.901	7.754

References

Phase	H / S	C_p
GAS	Pa2	Pa2

Ga2Cl6[g] DIGALLIUM HEXACHLORIDE (GAS) 352.162

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	164.976	500.633	500.633	−957.550	0.000	−1106.814	−957.550	−882.902	154.681
	300.00	165.184	501.654	500.636	−957.245	0.305	−1107.741	−957.531	−882.439	153.646
	400.00	172.521	550.329	507.223	−940.308	17.242	−1160.439	−967.696	−853.962	111.516
	500.00	175.966	589.237	519.867	−922.865	34.685	−1217.483	−966.360	−825.679	86.258
	600.00	177.878	621.504	534.194	−905.164	52.386	−1278.066	−964.902	−797.678	69.444
	700.00	179.067	649.020	548.681	−887.313	70.237	−1341.626	−963.404	−769.926	57.453
	800.00	179.871	672.986	562.753	−869.363	88.187	−1407.753	−961.884	−742.390	48.473
	900.00	180.450	694.207	576.203	−851.346	106.204	−1476.133	−960.357	−715.044	41.500
	1000.00	180.890	713.243	588.971	−833.278	124.272	−1546.521	−958.827	−687.870	35.931
	1100.00	181.239	730.501	601.065	−815.171	142.379	−1618.722	−957.294	−660.848	31.381
	1200.00	181.526	746.283	612.519	−797.032	160.518	−1692.572	−955.761	−633.966	27.596
	1300.00	181.770	760.823	623.375	−778.867	178.683	−1767.937	−954.228	−607.212	24.398
	1400.00	181.981	774.302	633.680	−760.679	196.871	−1844.702	−952.698	−580.576	21.662
	1500.00	182.170	786.864	643.478	−742.472	215.078	−1922.767	−951.170	−554.049	19.294
	1600.00	182.340	798.626	652.811	−724.246	233.304	−2002.048	−949.646	−527.624	17.225
	1700.00	182.497	809.685	661.717	−706.004	251.546	−2082.469	−948.127	−501.294	15.403
	1800.00	182.643	820.121	670.230	−687.747	269.803	−2163.964	−946.615	−475.054	13.786
	1900.00	182.781	829.999	678.381	−669.476	288.074	−2246.474	−945.109	−448.897	12.341
	2000.00	182.912	839.378	686.199	−651.191	306.359	−2329.947	−943.613	−422.819	11.043

References

Phase	H / S	C_p
GAS	Pa2	Pa2

88.721

GALLIUM MONOFLUORIDE (GAS) **GaF**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	33.364	227.811	227.811	−232.630	0.000	−300.552	−232.630	−258.147	45.226
	300.00	33.408	228.018	227.812	−232.568	0.062	−300.974	−232.646	−258.306	44.975
	400.00	35.005	237.878	229.145	−229.137	3.493	−324.288	−239.172	−264.921	34.595
	500.00	35.802	245.783	231.709	−225.593	7.037	−348.484	−240.006	−271.260	28.338
	600.00	36.283	252.356	234.618	−221.987	10.643	−373.401	−240.805	−277.436	24.153
	700.00	36.615	257.976	237.563	−218.341	14.289	−398.924	−241.596	−283.478	21.153
	800.00	36.868	262.882	240.428	−214.666	17.964	−424.972	−242.381	−289.408	18.896
	900.00	37.075	267.237	243.169	−210.969	21.661	−451.482	−243.165	−295.239	17.135
	1000.00	37.253	271.152	245.775	−207.252	25.378	−478.405	−243.945	−300.983	15.722
	1100.00	37.413	274.711	248.246	−203.519	29.111	−505.701	−244.722	−306.650	14.562
	1200.00	37.559	277.972	250.589	−199.770	32.860	−533.337	−245.494	−312.245	13.592
	1300.00	37.697	280.984	252.813	−196.007	36.623	−561.287	−246.261	−317.777	12.768
	1400.00	37.828	283.783	254.926	−192.231	40.399	−589.527	−247.023	−323.249	12.061
	1500.00	37.955	286.397	256.938	−188.442	44.188	−618.037	−247.779	−328.668	11.445
	1600.00	38.078	288.850	258.857	−184.640	47.990	−646.801	−248.529	−334.036	10.905
	1700.00	38.198	291.162	260.690	−180.826	51.804	−675.803	−249.273	−339.357	10.427
	1800.00	38.315	293.349	262.444	−177.001	55.629	−705.029	−250.011	−344.635	10.001
	1900.00	38.431	295.424	264.126	−173.163	59.467	−734.469	−250.742	−349.872	9.619
	2000.00	38.546	297.398	265.740	−169.315	63.315	−764.111	−251.466	−355.070	9.273

References

Phase	H / S	C_p
GAS	Pa2	Pa2

GaF2[g] GALLIUM DIFLUORIDE (GAS) 107.720

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	47.490	279.500	279.500	−536.807	0.000	−620.140	−536.807	−547.504	95.920
	300.00	47.595	279.794	279.501	−536.719	0.088	−620.657	−536.826	−547.570	95.340
	400.00	51.357	294.076	281.423	−531.746	5.061	−649.376	−543.417	−549.200	71.718
	500.00	53.197	305.754	285.158	−526.509	10.298	−679.386	−544.240	−550.549	57.515
	600.00	54.281	315.556	289.429	−521.131	15.676	−710.465	−545.003	−551.738	48.033
	700.00	55.007	323.981	293.778	−515.665	21.142	−742.451	−545.749	−552.802	41.251
	800.00	55.543	331.363	298.024	−510.136	26.671	−775.226	−546.483	−553.759	36.157
	900.00	55.969	337.930	302.100	−504.560	32.247	−808.697	−547.211	−554.625	32.190
	1000.00	56.325	343.846	305.984	−498.944	37.863	−842.791	−547.933	−555.410	29.012
	1100.00	56.637	349.229	309.674	−493.296	43.511	−877.448	−548.648	−556.123	26.408
	1200.00	56.918	354.170	313.179	−487.618	49.189	−912.622	−549.355	−556.771	24.236
	1300.00	57.178	358.736	316.510	−481.913	54.894	−948.270	−550.053	−557.361	22.395
	1400.00	57.422	362.982	319.679	−476.183	60.624	−984.358	−550.743	−557.897	20.815
	1500.00	57.655	366.952	322.700	−470.429	66.378	−1020.857	−551.423	−558.384	19.445
	1600.00	57.878	370.680	325.583	−464.652	72.155	−1057.741	−552.093	−558.826	18.244
	1700.00	58.095	374.196	328.341	−458.853	77.954	−1094.986	−552.752	−559.227	17.183
	1800.00	58.307	377.522	330.981	−453.033	83.774	−1132.573	−553.402	−559.589	16.239
	1900.00	58.514	380.680	333.515	−447.192	89.615	−1170.485	−554.040	−559.915	15.393
	2000.00	58.718	383.687	335.949	−441.330	95.477	−1208.704	−554.668	−560.208	14.631

References

Phase	H / S	C_p
GAS	Pa2	Pa2

126.718

GALLIUM FLUORIDE

GaF3

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	89.003	96.002	96.002	−1174.867	0.000	−1203.490	−1174.867	−1100.622	192.824
	300.00	89.072	96.553	96.004	−1174.702	0.165	−1203.668	−1174.838	−1100.162	191.555
	400.00	92.817	122.690	99.542	−1165.608	9.259	−1214.684	−1178.914	−1073.699	140.211
	500.00	96.561	143.804	106.348	−1156.139	18.728	−1228.041	−1177.187	−1047.591	109.441
	600.00	100.304	161.740	114.121	−1146.296	28.571	−1243.339	−1175.222	−1021.852	88.960
	700.00	104.048	177.483	122.070	−1136.078	38.789	−1260.316	−1172.991	−996.462	74.357
	800.00	107.791	191.621	129.895	−1125.486	49.381	−1278.783	−1170.465	−971.413	63.427
	900.00	111.534	204.533	137.481	−1114.520	60.347	−1298.599	−1167.627	−946.698	54.945
	1000.00	115.277	216.478	144.790	−1103.179	71.688	−1319.657	−1164.464	−922.317	48.177
	1100.00	119.020	227.641	151.820	−1091.464	83.403	−1341.869	−1160.966	−898.269	42.655
	1200.00	122.763	238.157	158.581	−1079.375	95.492	−1365.164	−1157.126	−874.555	38.068
	1300.00	126.506	248.131	165.089	−1066.912	107.955	−1389.482	−1152.939	−851.174	34.201
	1400.00	130.249	257.643	171.363	−1054.074	120.793	−1414.775	−1148.402	−828.130	30.898
	1500.00	133.992	266.757	177.421	−1040.862	134.005	−1440.998	−1143.512	−805.422	28.047
	1600.00	137.735	275.524	183.280	−1027.276	147.591	−1468.115	−1138.267	−783.051	25.564
	1700.00	141.478	283.987	188.956	−1013.315	161.552	−1496.093	−1132.666	−761.020	23.383
	1800.00	145.221	292.180	194.464	−998.980	175.887	−1524.903	−1126.707	−739.329	21.455
	1900.00	148.965	300.131	199.818	−984.271	190.596	−1554.520	−1120.389	−717.978	19.739
	2000.00	152.708	307.868	205.028	−969.187	205.680	−1584.922	−1113.711	−696.970	18.203

References

Phase	H / S	C_p
SOL	Pa2	Pa2

GaF3[g] GALLIUM FLUORIDE (GAS) 126.718

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	65.968	292.948	292.948	−921.526	0.000	−1008.868	−921.526	−906.001	158.728
	300.00	66.087	293.356	292.949	−921.404	0.122	−1009.411	−921.540	−905.904	157.732
	400.00	71.482	313.159	295.612	−914.507	7.019	−1039.771	−927.814	−898.786	117.369
	500.00	74.909	329.508	300.805	−907.174	14.352	−1071.928	−928.223	−891.478	93.132
	600.00	77.083	343.372	306.773	−899.567	21.959	−1105.590	−928.493	−884.102	76.968
	700.00	78.522	355.370	312.878	−891.782	29.744	−1140.541	−928.695	−876.687	65.419
	800.00	79.515	365.924	318.863	−883.877	37.649	−1176.616	−928.856	−869.246	56.756
	900.00	80.226	375.333	324.624	−875.888	45.638	−1213.687	−928.995	−861.786	50.017
	1000.00	80.752	383.814	330.126	−867.838	53.688	−1251.652	−929.122	−854.312	44.625
	1100.00	81.150	391.530	335.362	−859.742	61.784	−1290.425	−929.243	−846.825	40.212
	1200.00	81.458	398.605	340.342	−851.611	69.915	−1329.936	−929.361	−839.327	36.535
	1300.00	81.701	405.135	345.078	−843.452	78.074	−1370.128	−929.480	−831.819	33.423
	1400.00	81.896	411.197	349.587	−835.272	86.254	−1410.948	−929.600	−824.303	30.755
	1500.00	82.054	416.852	353.885	−827.075	94.451	−1452.353	−929.725	−816.777	28.443
	1600.00	82.184	422.152	357.988	−818.862	102.664	−1494.306	−929.854	−809.243	26.419
	1700.00	82.292	427.138	361.910	−810.639	110.887	−1536.773	−929.990	−801.701	24.633
	1800.00	82.382	431.844	365.666	−802.405	119.121	−1579.725	−930.132	−794.150	23.046
	1900.00	82.458	436.301	369.267	−794.163	127.363	−1623.134	−930.281	−786.592	21.625
	2000.00	82.523	440.532	372.726	−785.913	135.613	−1666.977	−930.437	−779.025	20.346

References

Phase	H / S	C_p
GAS	Pa2	Pa2

GaI3 GALLIUM IODIDE 450.436

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	117.152	203.761	203.761	−239.325	0.000	−300.076	−239.325	−235.962	41.340
	300.00	117.152	204.485	203.763	−239.108	0.217	−300.454	−239.308	−235.941	41.081
	400.00	117.152	238.188	208.358	−227.393	11.932	−322.668	−268.401	−232.281	30.333
	486.00	117.152	261.003	215.721	−217.318	22.007	−344.165	−332.153	−220.408	23.689
			45.628		22.175					
LIQ	486.00	128.449	306.630	215.721	−195.143	44.182	−344.165	−309.978	−220.408	23.689
	500.00	128.449	310.278	218.318	−193.345	45.980	−348.484	−309.341	−217.837	22.757
	600.00	128.449	333.697	235.655	−180.500	58.825	−380.718	−304.791	−199.964	17.408
	618.20	128.449	337.535	238.598	−178.162	61.163	−386.826	−303.964	−196.796	16.628

References

Phase	H / S	C_p	Remarks	
SOL	Tk1/e	e		
LIQ	Tk1	e	Tk1	NBPT= 618.2

83.730

GALLIUM NITRIDE

GaN

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[–]
SOL	298.15	40.756	29.706	29.706	–109.621	0.000	–118.478	–109.621	–77.741	13.620
	300.00	40.773	29.959	29.707	–109.546	0.075	–118.533	–109.621	–77.543	13.501
	400.00	41.673	41.811	31.317	–105.423	4.198	–122.148	–115.308	–65.039	8.493
	500.00	42.572	51.207	34.387	–101.211	8.410	–126.815	–115.263	–52.474	5.482
	600.00	43.472	59.048	37.862	–96.909	12.712	–132.338	–115.121	–39.928	3.476
	700.00	44.371	65.817	41.382	–92.517	17.104	–138.589	–114.911	–27.412	2.046
	800.00	45.271	71.801	44.818	–88.035	21.586	–145.475	–114.641	–14.930	0.975
	900.00	46.170	77.185	48.120	–83.463	26.158	–152.929	–114.314	–2.485	0.144
	1000.00	47.070	82.096	51.276	–78.801	30.820	–160.897	–113.928	9.920	–0.518
	1100.00	47.970	86.624	54.286	–74.049	35.572	–169.335	–113.482	22.284	–1.058
	1200.00	48.869	90.837	57.158	–69.207	40.414	–178.211	–112.971	34.604	–1.506
	1300.00	49.769	94.784	59.902	–64.275	45.346	–187.494	–112.393	46.879	–1.884
	1400.00	50.668	98.505	62.528	–59.253	50.368	–197.160	–111.745	59.107	–2.205
	1500.00	51.568	102.032	65.045	–54.141	55.480	–207.189	–111.024	71.286	–2.482
	1600.00	52.467	105.388	67.462	–48.939	60.682	–217.561	–110.229	83.414	–2.723
	1700.00	53.367	108.596	69.788	–43.648	65.973	–228.261	–109.357	95.491	–2.934
	1773.00	54.024	110.854	71.433	–39.728	69.893	–236.272	–108.671	104.273	–3.072

References

Phase	H / S	C_p	Remarks
SOL	Tk1/Ku1	e	Tk1 MPT= 1773.

GaO[g] GALLIUM MONOXIDE (GAS) 85.722

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	36.819	230.941	230.941	141.197	0.000	72.342	141.197	115.097	−20.165
	300.00	36.843	231.169	230.942	141.265	0.068	71.914	141.189	114.935	−20.012
	400.00	38.417	241.981	232.405	145.027	3.830	48.235	135.115	108.055	−14.111
	500.00	39.696	250.699	235.220	148.937	7.740	23.587	134.798	101.329	−10.586
	600.00	40.613	258.022	238.426	152.955	11.758	−1.859	134.568	94.658	−8.241
	700.00	41.322	264.338	241.687	157.052	15.855	−27.984	134.377	88.022	−6.568
	800.00	41.936	269.896	244.873	161.216	20.019	−54.701	134.215	81.411	−5.316
	900.00	42.525	274.869	247.934	165.439	24.242	−81.944	134.079	74.819	−4.342
	1000.00	43.133	279.381	250.857	169.721	28.524	−109.660	133.973	68.240	−3.565
	1100.00	43.834	283.525	253.641	174.070	32.873	−137.808	133.910	61.670	−2.928
	1200.00	44.601	287.371	256.293	178.491	37.294	−166.355	133.900	55.104	−2.399
	1300.00	45.436	290.974	258.824	182.992	41.795	−195.274	133.953	48.536	−1.950
	1400.00	46.314	294.373	261.243	187.579	46.382	−224.543	134.077	41.961	−1.566
	1500.00	47.206	297.599	263.560	192.255	51.058	−254.143	134.275	35.375	−1.232
	1600.00	48.085	300.673	265.784	197.020	55.823	−284.057	134.550	28.773	−0.939
	1700.00	48.928	303.614	267.923	201.871	60.674	−314.273	134.898	22.152	−0.681
	1800.00	49.715	306.433	269.985	206.804	65.607	−344.776	135.316	15.508	−0.450
	1900.00	50.428	309.141	271.975	211.811	70.614	−375.556	135.797	8.839	−0.243
	2000.00	51.054	311.744	273.899	216.886	75.689	−406.601	136.334	2.144	−0.056

References

Phase	H / S	C_p
GAS	Tk1	e

155.445

DIGALLIUM OXIDE (GAS) **Ga2O**[g]

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	48.116	283.785	283.785	−98.742	0.000	−183.352	−98.742	−128.425	22.499
	300.00	48.170	284.083	283.786	−98.653	0.089	−183.878	−98.778	−128.609	22.393
	400.00	50.917	298.332	285.710	−93.693	5.049	−213.026	−112.005	−134.647	17.583
	500.00	52.858	309.917	289.429	−88.498	10.244	−243.456	−113.733	−140.103	14.636
	600.00	54.148	319.676	293.678	−83.143	15.599	−274.949	−115.294	−145.229	12.643
	700.00	55.030	328.093	298.007	−77.682	21.060	−307.347	−116.783	−150.100	11.201
	800.00	55.656	335.484	302.239	−72.146	26.596	−340.533	−118.229	−154.760	10.105
	900.00	56.115	342.068	306.305	−66.556	32.186	−374.417	−119.656	−159.241	9.242
	1000.00	56.462	347.999	310.183	−60.927	37.815	−408.925	−121.071	−163.563	8.544
	1100.00	56.730	353.393	313.870	−55.266	43.476	−443.999	−122.479	−167.744	7.965
	1200.00	56.941	358.339	317.372	−49.582	49.160	−479.589	−123.884	−171.797	7.478
	1300.00	57.111	362.903	320.701	−43.879	54.863	−515.654	−125.286	−175.733	7.061
	1400.00	57.247	367.141	323.869	−38.161	60.581	−552.159	−126.688	−179.561	6.699
	1500.00	57.358	371.094	326.887	−32.431	66.311	−589.073	−128.092	−183.288	6.383
	1600.00	57.449	374.799	329.767	−26.690	72.052	−626.369	−129.498	−186.922	6.102
	1700.00	57.523	378.284	332.519	−20.942	77.800	−664.025	−130.909	−190.468	5.852
	1800.00	57.583	381.574	335.154	−15.186	83.556	−702.020	−132.326	−193.931	5.628
	1900.00	57.630	384.689	337.680	−9.425	89.317	−740.334	−133.748	−197.314	5.425
	2000.00	57.667	387.646	340.105	−3.661	95.081	−778.952	−135.178	−200.623	5.240

References

Phase	H / S	C_p
GAS	C2/Tk1	e

Ga2O3 GALLIUM OXIDE 187.444

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL–B	298.15	92.191	84.977	84.977	–1089.095	0.000	–1114.431	–1089.095	–998.339	174.905
	300.00	92.392	85.548	84.979	–1088.924	0.171	–1114.589	–1089.103	–997.775	173.728
	400.00	102.868	113.609	88.733	–1079.145	9.950	–1124.588	–1100.481	–963.687	125.845
	500.00	110.541	137.441	96.152	–1068.450	20.645	–1137.171	–1099.770	–929.556	97.110
	600.00	115.827	158.092	104.793	–1057.116	31.979	–1151.971	–1098.511	–895.624	77.971
	700.00	119.573	176.243	113.730	–1045.336	43.759	–1168.706	–1096.936	–861.931	64.318
	800.00	122.334	192.399	122.573	–1033.234	55.861	–1187.153	–1095.153	–828.479	54.094
	900.00	124.442	206.935	131.152	–1020.891	68.204	–1207.132	–1093.232	–795.259	46.156
	1000.00	126.105	220.136	139.401	–1008.360	80.735	–1228.496	–1091.208	–762.258	39.816
	1100.00	127.457	232.220	147.297	–995.680	93.415	–1251.122	–1089.105	–729.465	34.639
	1200.00	128.587	243.360	154.844	–982.876	106.219	–1274.908	–1086.938	–696.865	30.334
	1300.00	129.561	253.692	162.055	–969.968	119.127	–1299.767	–1084.718	–664.449	26.698
	1400.00	130.425	263.326	168.949	–956.968	132.127	–1325.623	–1082.452	–632.205	23.588
	1500.00	131.218	272.351	175.545	–943.885	145.210	–1352.412	–1080.144	–600.125	20.898
	1600.00	131.970	280.844	181.863	–930.725	158.370	–1380.076	–1077.799	–568.200	18.550
	1700.00	132.705	288.867	187.924	–917.492	171.603	–1408.565	–1075.417	–536.423	16.482
	1800.00	133.446	296.473	193.745	–904.184	184.911	–1437.835	–1072.997	–504.787	14.649
	1900.00	134.213	303.708	199.343	–890.801	198.294	–1467.847	–1070.537	–473.287	13.012
	2000.00	135.022	310.613	204.736	–877.340	211.755	–1498.566	–1068.034	–441.917	11.542
	2073.00	135.650	315.465	208.550	–867.461	221.634	–1521.419	–1066.175	–419.097	10.560
			52.581		109.000					
LIQ	2073.00	184.000	368.045	208.550	–758.461	330.634	–1521.419	–957.175	–419.097	10.560
	2100.00	184.000	370.426	210.616	–753.493	335.602	–1531.388	–955.178	–412.102	10.250
	2200.00	184.000	378.986	218.076	–735.093	354.002	–1568.862	–947.804	–386.414	9.175
	2300.00	184.000	387.165	225.251	–716.693	372.402	–1607.173	–940.464	–361.061	8.200

References

Phase	H / S	C_p	Remarks
SOL–B	Tk1	Pa1	monoclinic
LIQ	e	e	

100.697

GALLIUM PHOSPHIDE

GaP

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	44.108	51.380	51.380	−100.416	0.000	−115.735	−100.416	−91.317	15.998
	300.00	44.187	51.653	51.380	−100.334	0.082	−115.830	−100.427	−91.261	15.890
	400.00	47.074	64.812	53.155	−95.753	4.663	−121.678	−107.448	−86.120	11.246
	500.00	48.589	75.494	56.589	−90.963	9.453	−128.710	−107.988	−80.721	8.433
	600.00	49.565	84.444	60.506	−86.053	14.363	−136.719	−108.378	−75.230	6.549
	700.00	50.285	92.141	64.488	−81.059	19.357	−145.558	−108.678	−69.680	5.200
	800.00	50.869	98.895	68.375	−76.000	24.416	−155.116	−108.909	−64.093	4.185
	900.00	51.375	104.916	72.107	−70.888	29.528	−165.312	−109.086	−58.479	3.394
	1000.00	51.831	110.353	75.664	−65.727	34.689	−176.080	−109.215	−52.849	2.761
	1100.00	52.254	115.313	79.046	−60.522	39.894	−187.367	−109.300	−47.208	2.242
	1200.00	52.656	119.877	82.261	−55.277	45.139	−199.130	−172.915	−40.472	1.762
	1300.00	53.042	124.108	85.320	−49.992	50.424	−211.331	−172.144	−29.466	1.184
	1400.00	53.417	128.052	88.233	−44.669	55.747	−223.942	−171.341	−18.521	0.691
	1500.00	53.784	131.750	91.012	−39.309	61.107	−236.934	−170.504	−7.634	0.266
	1600.00	54.143	135.233	93.668	−33.912	66.504	−250.285	−169.635	3.196	−0.104
	1700.00	54.498	138.526	96.211	−28.480	71.936	−263.974	−168.733	13.971	−0.429
	1790.00	54.814	141.345	98.410	−23.561	76.855	−276.569	−167.894	23.621	−0.689

References

Phase	H / S	C_p	Remarks
SOL	Pa3	Pa2	Tk1 MPT= 1790.

101.789

GALLIUM MONOSULFIDE

GaS

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	46.016	57.739	57.739	−209.200	0.000	−226.415	−209.200	−204.685	35.860
	300.00	46.045	58.024	57.740	−209.115	0.085	−226.522	−209.206	−204.657	35.634
	400.00	47.614	71.485	59.565	−204.432	4.768	−233.026	−217.455	−201.190	26.273
	500.00	49.183	82.278	63.063	−199.592	9.608	−240.731	−219.214	−196.939	20.574
	600.00	50.752	91.384	67.043	−194.595	14.605	−249.426	−220.461	−192.356	16.746
	700.00	52.321	99.325	71.099	−189.442	19.758	−258.970	−221.279	−187.604	13.999
	800.00	53.890	106.414	75.078	−184.131	25.069	−269.263	−221.985	−182.745	11.932
	900.00	55.459	112.852	78.923	−178.664	30.536	−280.231	−275.381	−176.649	10.252
	1000.00	57.028	118.777	82.616	−173.039	36.161	−291.816	−274.249	−165.738	8.657
	1100.00	58.597	124.286	86.157	−167.258	41.942	−303.972	−272.966	−154.947	7.358
	1200.00	60.166	129.451	89.551	−161.320	47.880	−316.662	−271.534	−144.281	6.280
	1233.00	60.684	131.091	90.641	−159.326	49.874	−320.961	−271.028	−140.788	5.964

References

Phase	H / S	C_p	Remarks
SOL	Mi1	Mi1	Mi1 MPT= 1233.

Ga2S[g] DIGALLIUM SULFIDE (GAS) 171.512

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	45.944	290.061	290.061	20.920	0.000	−65.562	20.920	−31.659	5.546
	300.00	46.074	290.345	290.061	21.005	0.085	−66.098	20.865	−31.985	5.569
	400.00	50.684	304.324	291.936	25.875	4.955	−95.854	4.453	−45.460	5.936
	500.00	52.879	315.895	295.606	31.065	10.145	−126.883	0.347	−57.480	6.005
	600.00	54.125	325.656	299.822	36.420	15.500	−158.973	−3.210	−68.700	5.981
	700.00	54.921	334.063	304.127	41.875	20.955	−191.969	−6.388	−79.361	5.922
	800.00	55.479	341.435	308.339	47.397	26.477	−225.752	−9.540	−89.572	5.848
	900.00	55.897	347.995	312.388	52.966	32.046	−260.229	−65.491	−98.233	5.701
	1000.00	56.229	353.902	316.249	58.573	37.653	−295.329	−67.033	−101.788	5.317
	1100.00	56.504	359.274	319.920	64.210	43.290	−330.992	−68.552	−105.190	4.995
	1200.00	56.741	364.201	323.407	69.873	48.953	−367.169	−70.051	−108.454	4.721
	1300.00	56.951	368.751	326.723	75.558	54.638	−403.819	−71.534	−111.594	4.484
	1400.00	57.142	372.979	329.877	81.262	60.342	−440.908	−73.002	−114.621	4.277
	1500.00	57.318	376.927	332.884	86.985	66.065	−478.406	−74.456	−117.543	4.093
	1600.00	57.483	380.632	335.754	92.726	71.806	−516.286	−75.898	−120.368	3.930
	1700.00	57.639	384.122	338.497	98.482	77.562	−554.525	−77.328	−123.103	3.783
	1800.00	57.789	387.420	341.124	104.253	83.333	−593.104	−78.747	−125.755	3.649
	1900.00	57.933	390.549	343.644	110.039	89.119	−632.003	−80.155	−128.328	3.528
	2000.00	58.073	393.524	346.064	115.839	94.919	−671.208	−81.553	−130.827	3.417

References

Phase	H / S	C_p
GAS	Mi1	Mi1

Ga2S3 DIGALLIUM TRISULFIDE 235.644

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	104.596	142.256	142.256	−516.306	0.000	−558.720	−516.306	−505.702	88.597
	300.00	104.684	142.903	142.258	−516.112	0.194	−558.983	−516.336	−505.636	88.039
	400.00	109.412	173.666	146.421	−505.408	10.898	−574.874	−536.076	−497.925	65.022
	500.00	114.140	198.589	154.437	−494.230	22.076	−593.524	−542.000	−487.759	50.956
	600.00	118.867	219.817	163.606	−482.580	33.726	−614.470	−546.413	−476.463	41.480
	700.00	123.595	238.495	172.996	−470.457	45.849	−637.403	−549.542	−464.548	34.665
	800.00	128.323	255.308	182.251	−457.861	58.445	−662.107	−552.340	−452.215	29.527
	900.00	133.051	270.695	191.235	−444.792	71.514	−688.418	−713.204	−436.085	25.310
	1000.00	137.779	284.958	199.903	−431.250	85.056	−716.209	−710.481	−405.436	21.178
	1100.00	142.507	298.312	208.248	−417.236	99.070	−745.379	−707.308	−375.081	17.811
	1200.00	147.235	310.914	216.283	−402.749	113.557	−775.846	−703.680	−345.036	15.019
	1300.00	151.963	322.886	224.027	−387.789	128.517	−807.541	−699.595	−315.311	12.669
	1363.00	154.941	330.147	228.765	−378.122	138.184	−828.112	−696.787	−296.754	11.373

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	Mi1	Mi1	MPT= 1363.

191.473

GALLIUM ANTIMONY

GaSb

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL	298.15	24.348	76.065	76.065	−41.589	0.000	−64.268	−41.589	−38.523	6.749
	300.00	24.360	76.216	76.066	−41.544	0.045	−64.409	−41.639	−38.504	6.704
	400.00	24.967	83.309	77.029	−39.077	2.512	−72.400	−50.086	−35.233	4.601
	500.00	25.538	88.941	78.867	−36.552	5.037	−81.022	−52.878	−31.195	3.259
	600.00	26.110	93.648	80.948	−33.969	7.620	−90.158	−55.642	−26.599	2.316
	700.00	26.700	97.717	83.060	−31.329	10.260	−99.731	−58.422	−21.540	1.607
	800.00	27.311	101.322	85.121	−28.629	12.960	−109.686	−61.247	−16.079	1.050
	900.00	27.947	104.575	87.105	−25.866	15.723	−119.983	−64.150	−10.259	0.595
	985.00	28.509	107.122	88.724	−23.467	18.122	−128.982	−86.549	−3.273	0.174
			67.242		66.233					
LIQ	985.00	62.760	174.364	88.724	42.766	84.355	−128.982	−20.316	−3.273	0.174
	1000.00	62.760	175.312	90.015	43.708	85.297	−131.604	−20.243	−3.014	0.157
	1100.00	62.760	181.294	98.046	49.984	91.573	−149.439	−19.762	−1.314	0.062
	1200.00	62.760	186.755	105.214	56.260	97.849	−167.846	−19.281	0.342	−0.015

References

Phase	H / S	C_p
SOL	Hu1	Hu1
LIQ	Hu1	Hu1

148.683

GALLIUM MONOSELENIDE

GaSe

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL	298.15	48.510	70.291	70.291	−158.992	0.000	−179.949	−158.992	−155.177	27.186
	300.00	48.534	70.591	70.292	−158.902	0.090	−180.080	−158.998	−155.154	27.015
	400.00	49.831	84.731	72.211	−153.984	5.008	−187.877	−165.098	−152.004	19.850
	500.00	51.128	95.990	75.878	−148.936	10.056	−196.931	−171.557	−148.582	15.522
	600.00	52.426	105.427	80.037	−143.758	15.234	−207.014	−172.562	−143.891	12.527
	700.00	53.723	113.606	84.261	−138.451	20.541	−217.975	−173.431	−139.042	10.375
	800.00	55.020	120.864	88.391	−133.014	25.978	−229.705	−174.165	−134.077	8.754
	900.00	56.317	127.419	92.369	−127.447	31.545	−242.124	−174.770	−129.028	7.489
	1000.00	57.614	133.420	96.178	−121.750	37.242	−255.170	−175.245	−123.919	6.473
	1100.00	58.911	138.972	99.819	−115.924	43.068	−268.793	−228.901	−113.815	5.405
	1200.00	60.208	144.153	103.300	−109.968	49.024	−282.952	−227.670	−103.406	4.501
	1233.00	60.636	145.793	104.416	−107.974	51.018	−287.737	−227.233	−99.994	4.236

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	Mi1	Mi1	MPT= 1233.

Ga2Se3 — DIGALLIUM TRISELENIDE — 376.326

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	116.258	179.912	179.912	−408.777	0.000	−462.418	−408.777	−400.274	70.126
	300.00	116.324	180.631	179.914	−408.562	0.215	−462.751	−408.800	−400.221	69.685
	400.00	119.855	214.579	184.519	−396.753	12.024	−482.585	−421.696	−393.524	51.389
	500.00	123.386	241.703	193.331	−384.591	24.186	−505.443	−441.359	−386.008	40.326
	600.00	126.917	264.511	203.343	−372.076	36.701	−530.783	−444.724	−374.615	32.613
	700.00	130.449	284.341	213.527	−359.207	49.570	−558.246	−447.722	−362.688	27.064
	800.00	133.980	301.991	223.502	−345.986	62.791	−587.578	−450.358	−350.356	22.876
	900.00	137.511	317.975	233.124	−332.411	76.366	−618.589	−452.641	−337.716	19.601
	1000.00	141.043	332.646	242.353	−318.484	90.293	−651.130	−454.570	−324.839	16.968
	1100.00	144.574	346.254	251.187	−304.203	104.574	−685.083	−616.081	−296.925	14.100
	1200.00	148.105	358.985	259.645	−289.569	119.208	−720.351	−612.964	−268.045	11.668
	1293.00	151.389	370.162	267.196	−275.642	133.135	−754.261	−609.717	−241.434	9.753

References

Phase	H / S	C_p	Remarks
SOL	Mi1	Mi1	Tk1 MPT= 1293.

Ga2(SeO4)3 — GALLIUM SELENATE — 568.319

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	261.099	303.340	303.340	−1978.195	0.000	−2068.636	−1978.195	−1639.505	287.234
	300.00	261.680	304.957	303.345	−1977.711	0.484	−2069.198	−1978.276	−1637.403	285.097
	400.00	293.060	384.535	313.984	−1949.974	28.221	−2103.788	−1993.070	−1519.590	198.438
	500.00	324.440	453.301	335.109	−1919.099	59.096	−2145.750	−2012.373	−1400.743	146.335
	600.00	355.820	515.227	360.046	−1885.086	93.109	−2194.222	−2013.198	−1278.296	111.286
	700.00	387.200	572.433	386.348	−1847.935	130.260	−2248.639	−2011.441	−1155.916	86.255
	800.00	418.580	626.185	412.999	−1807.646	170.549	−2308.594	−2007.032	−1033.967	67.511

References

Phase	H / S	C_p
SOL	Ku1	Nb1,e

197.323

GALLIUM MONOTELLURIDE **GaTe**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL	298.15	49.437	85.354	85.354	−123.428	0.000	−148.876	−123.428	−121.946	21.364
	300.00	49.463	85.659	85.355	−123.337	0.091	−149.034	−123.433	−121.937	21.231
	400.00	50.861	100.081	87.311	−118.320	5.108	−158.353	−129.453	−119.581	15.616
	500.00	52.258	111.580	91.053	−113.164	10.264	−168.954	−129.900	−117.062	12.229
	600.00	53.656	121.231	95.299	−107.869	15.559	−180.607	−130.399	−114.448	9.964
	700.00	55.053	129.607	99.615	−102.433	20.995	−193.158	−130.974	−111.745	8.339
	800.00	56.451	137.050	103.837	−96.858	26.570	−206.498	−149.246	−107.075	6.991
	900.00	57.848	143.779	107.907	−91.143	32.285	−220.545	−149.954	−101.760	5.906
	1000.00	59.245	149.947	111.807	−85.288	38.140	−235.235	−150.521	−96.373	5.034
	1100.00	60.643	155.659	115.537	−79.294	44.134	−250.519	−150.949	−90.936	4.318
	1108.00	60.755	156.099	115.828	−78.808	44.620	−251.766	−150.978	−90.500	4.266

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	Mi1	Mi1	MPT= 1108.

522.246

DIGALLIUM TRITELLURIDE **Ga2Te3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL	298.15	150.572	213.384	213.384	−274.889	0.000	−338.509	−274.889	−269.892	47.284
	300.00	150.917	214.316	213.387	−274.610	0.279	−338.905	−274.851	−269.861	46.987
	400.00	169.536	260.282	219.529	−258.587	16.302	−362.700	−283.585	−264.943	34.598
	500.00	188.154	300.113	231.741	−240.703	34.186	−390.760	−279.813	−260.693	27.234
	600.00	206.773	336.064	246.176	−220.957	53.932	−422.595	−274.784	−257.320	22.402
	700.00	225.392	369.336	261.421	−199.348	75.541	−457.884	−268.543	−254.886	19.020
	800.00	244.011	400.649	276.885	−175.878	99.011	−496.397	−313.959	−247.790	16.179
	900.00	262.630	430.464	292.305	−150.546	124.343	−537.964	−305.237	−240.023	13.931
	943.00	270.636	442.907	298.890	−139.081	135.808	−556.742	−300.915	−237.007	13.128

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	Mi1	Tk1	TPT= 943., MPT= 1065.

Gd GADOLINIUM 157.250

Phase	T [K]	C_p J / (K mol)	S J / (K mol)	−(G−H298)/T J / (K mol)	H kJ / mol	H−H298 kJ / mol	G kJ / mol	ΔH_f kJ / mol	ΔG_f kJ / mol	log K_f [−]
SOL−A	298.15	37.198	67.948	67.948	0.000	0.000	−20.259	0.000	0.000	0.000
	300.00	36.770	68.177	67.949	0.068	0.068	−20.385	0.000	0.000	0.000
	400.00	28.179	77.106	69.224	3.153	3.153	−27.690	0.000	0.000	0.000
	500.00	28.219	83.357	71.448	5.954	5.954	−35.724	0.000	0.000	0.000
	600.00	29.126	88.581	73.879	8.821	8.821	−44.328	0.000	0.000	0.000
	700.00	30.018	93.138	76.312	11.778	11.778	−53.418	0.000	0.000	0.000
	800.00	30.862	97.202	78.673	14.823	14.823	−62.939	0.000	0.000	0.000
	900.00	31.638	100.883	80.940	17.949	17.949	−72.846	0.000	0.000	0.000
	1000.00	32.509	104.260	83.105	21.155	21.155	−83.105	0.000	0.000	0.000
	1100.00	33.475	107.403	85.173	24.453	24.453	−93.690	0.000	0.000	0.000
	1200.00	34.515	110.360	87.150	27.852	27.852	−104.580	0.000	0.000	0.000
	1300.00	35.654	113.167	89.044	31.360	31.360	−115.757	0.000	0.000	0.000
	1400.00	36.903	115.854	90.864	34.987	34.987	−127.209	0.000	0.000	0.000
	1500.00	38.247	118.445	92.616	38.743	38.743	−138.925	0.000	0.000	0.000
	1533.00	38.705	119.283	93.181	40.013	40.013	−142.847	0.000	0.000	0.000
			2.552		3.912					
SOL−B	1533.00	28.284	121.834	93.181	43.925	43.925	−142.847	0.000	0.000	0.000
	1585.00	28.284	122.778	94.137	45.396	45.396	−149.207	0.000	0.000	0.000
			6.343		10.054					
LIQ	1585.00	37.154	129.121	94.137	55.450	55.450	−149.207	0.000	0.000	0.000
	1600.00	37.154	129.471	94.467	56.007	56.007	−151.147	0.000	0.000	0.000
	1700.00	37.154	131.724	96.593	59.723	59.723	−164.208	0.000	0.000	0.000
	1800.00	37.154	133.847	98.604	63.438	63.438	−177.487	0.000	0.000	0.000
	1900.00	37.154	135.856	100.512	67.153	67.153	−190.973	0.000	0.000	0.000
	2000.00	37.154	137.762	102.327	70.869	70.869	−204.655	0.000	0.000	0.000
	2100.00	37.154	139.575	104.058	74.584	74.584	−218.522	0.000	0.000	0.000
	2200.00	37.154	141.303	105.712	78.299	78.299	−232.567	0.000	0.000	0.000
	2300.00	37.154	142.954	107.296	82.015	82.015	−246.780	0.000	0.000	0.000
	2400.00	37.154	144.536	108.815	85.730	85.730	−261.156	0.000	0.000	0.000
	2500.00	37.154	146.052	110.274	89.446	89.446	−275.685	0.000	0.000	0.000
	2600.00	37.154	147.510	111.678	93.161	93.161	−290.364	0.000	0.000	0.000
	2700.00	37.154	148.912	113.032	96.876	96.876	−305.186	0.000	0.000	0.000
	2800.00	37.154	150.263	114.337	100.592	100.592	−320.145	0.000	0.000	0.000
	2900.00	37.154	151.567	115.599	104.307	104.307	−335.237	0.000	0.000	0.000
	3000.00	37.154	152.826	116.819	108.023	108.023	−350.457	0.000	0.000	0.000
	3100.00	37.154	154.045	118.000	111.738	111.738	−365.801	0.000	0.000	0.000
	3200.00	37.154	155.224	119.145	115.453	115.453	−381.264	0.000	0.000	0.000
	3300.00	37.154	156.368	120.256	119.169	119.169	−396.844	0.000	0.000	0.000
	3400.00	37.154	157.477	121.334	122.884	122.884	−412.537	0.000	0.000	0.000
	3500.00	37.154	158.554	122.382	126.600	126.600	−428.338	0.000	0.000	0.000
	3535.00	37.154	158.923	122.742	127.900	127.900	−433.894	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks
SOL−A	Hu1	Hu1	
SOL−B	Hu1	Hu1	
LIQ	Hu1	Hu1	Hu1 BPT= 3535., L= 359.4 kJ

157.250

GADOLINIUM (GAS)

Gd[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	27.578	194.314	194.314	397.480	0.000	339.545	397.480	359.804	−63.036
	300.00	27.570	194.485	194.315	397.531	0.051	339.186	397.463	359.570	−62.607
	400.00	27.308	202.378	195.392	400.274	2.794	319.323	397.121	347.013	−45.315
	500.00	26.951	208.436	197.419	402.988	5.508	298.770	397.034	334.495	−34.944
	600.00	26.470	213.308	199.675	405.660	8.180	277.675	396.839	322.003	−28.033
	700.00	25.951	217.350	201.920	408.281	10.801	256.136	396.503	309.555	−23.099
	800.00	25.454	220.782	204.068	410.851	13.371	234.225	396.028	297.164	−19.403
	900.00	25.019	223.754	206.094	413.374	15.894	211.995	395.425	284.841	−16.532
	1000.00	24.667	226.371	207.994	415.858	18.378	189.486	394.703	272.591	−14.239
	1100.00	24.414	228.710	209.773	418.311	20.831	166.730	393.858	260.420	−12.366
	1200.00	24.270	230.827	211.440	420.744	23.264	143.752	392.892	248.331	−10.810
	1300.00	24.241	232.768	213.007	423.169	25.689	120.571	391.809	236.328	−9.496
	1400.00	24.273	234.564	214.484	425.593	28.113	97.203	390.606	224.412	−8.373
	1500.00	24.462	236.245	215.879	428.029	30.549	73.662	389.285	212.586	−7.403
	1600.00	24.763	237.832	217.202	430.489	33.009	49.957	374.482	201.104	−6.565
	1700.00	25.141	239.345	218.460	432.984	35.504	26.098	373.261	190.305	−5.847
	1800.00	25.574	240.794	219.661	435.519	38.039	2.090	372.081	179.577	−5.211
	1900.00	26.044	242.189	220.810	438.100	40.620	−22.059	370.946	168.914	−4.644
	2000.00	26.539	243.537	221.913	440.729	43.249	−46.346	369.860	158.309	−4.135
	2100.00	27.050	244.845	222.974	443.408	45.928	−70.765	368.824	147.757	−3.675
	2200.00	27.570	246.115	223.997	446.139	48.659	−95.314	367.840	137.253	−3.259
	2300.00	28.093	247.352	224.986	448.922	51.442	−119.987	366.907	126.793	−2.880
	2400.00	28.615	248.559	225.943	451.758	54.278	−144.783	366.027	116.373	−2.533
	2500.00	29.132	249.737	226.871	454.645	57.165	−169.698	365.199	105.987	−2.214
	2600.00	29.643	250.890	227.773	457.584	60.104	−194.730	364.423	95.634	−1.921
	2700.00	30.145	252.018	228.650	460.573	63.093	−219.875	363.697	85.310	−1.650
	2800.00	30.635	253.123	229.504	463.612	66.132	−245.132	363.021	75.012	−1.399
	2900.00	31.113	254.207	230.338	466.700	69.220	−270.499	362.393	64.737	−1.166
	3000.00	31.578	255.269	231.151	469.835	72.355	−295.973	361.812	54.484	−0.949
	3100.00	32.028	256.312	231.946	473.015	75.535	−321.552	361.277	44.248	−0.746
	3200.00	32.463	257.336	232.723	476.240	78.760	−347.235	360.786	34.029	−0.555
	3300.00	32.882	258.341	233.485	479.507	82.027	−373.019	360.338	23.825	−0.377
	3400.00	33.285	259.329	234.230	482.816	85.336	−398.903	359.932	13.634	−0.209
	3500.00	33.670	260.299	234.961	486.164	88.684	−424.884	359.564	3.454	−0.052
	3600.00	34.038	261.253	235.678	489.549	92.069	−450.962	0.000	0.000	0.000
	3700.00	34.388	262.191	236.382	492.971	95.491	−477.134	0.000	0.000	0.000
	3800.00	34.720	263.112	237.074	496.426	98.946	−503.399	0.000	0.000	0.000
	3900.00	35.034	264.018	237.753	499.914	102.434	−529.756	0.000	0.000	0.000
	4000.00	35.329	264.909	238.421	503.432	105.952	−556.203	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1

GdBr3 GADOLINIUM BROMIDE 396.962

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	96.957	189.954	189.954	−828.850	0.000	−885.485	−828.850	−797.154	139.658
	300.00	97.050	190.554	189.955	−828.671	0.179	−885.837	−828.949	−796.957	138.763
	400.00	100.524	219.009	193.812	−818.771	10.079	−906.375	−873.857	−776.960	101.461
	500.00	102.441	241.662	201.193	−808.615	20.235	−929.447	−872.041	−752.943	78.659
	600.00	103.745	260.461	209.549	−798.303	30.547	−954.579	−870.173	−729.299	63.491
	700.00	104.761	276.532	217.998	−787.876	40.974	−981.448	−868.306	−705.968	52.680
	800.00	105.621	290.579	226.211	−777.356	51.494	−1009.819	−866.452	−682.904	44.589
	900.00	106.393	303.064	234.069	−766.754	62.096	−1039.512	−864.613	−660.071	38.310
	1000.00	107.108	314.311	241.540	−756.079	72.771	−1070.390	−862.792	−637.442	33.297
	1058.00	107.506	320.361	245.697	−749.855	78.995	−1088.797	−861.750	−624.401	30.827
			36.046		38.137					
LIQ	1058.00	139.327	356.408	245.697	−711.718	117.132	−1088.797	−823.613	−624.401	30.827
	1100.00	139.327	361.832	250.028	−705.866	122.984	−1103.881	−821.537	−616.533	29.277
	1200.00	139.327	373.955	259.858	−691.934	136.916	−1140.679	−816.672	−598.112	26.035
	1300.00	139.327	385.107	269.069	−678.001	150.849	−1178.640	−811.926	−580.092	23.308

References

Phase	H / S	C_p
SOL	Pa2	Pa2
LIQ	Pa2	Pa2

396.962

GADOLINIUM BROMIDE (GAS) **GdBr3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	79.926	398.932	398.933	−531.368	0.000	−650.310	−531.368	−561.979	98.456
	300.00	79.964	399.427	398.934	−531.220	0.148	−651.048	−531.498	−562.169	97.882
	400.00	81.323	422.645	402.090	−523.146	8.222	−692.204	−578.232	−562.790	73.493
	500.00	81.956	440.868	408.089	−514.979	16.389	−735.413	−578.404	−558.909	58.389
	600.00	82.303	455.844	414.837	−506.764	24.604	−780.270	−578.634	−554.990	48.316
	700.00	82.515	468.548	421.626	−498.522	32.846	−826.506	−578.953	−551.025	41.118
	800.00	82.654	479.576	428.195	−490.264	41.104	−873.924	−579.360	−547.009	35.716
	900.00	82.752	489.317	434.456	−481.993	49.375	−922.378	−579.851	−542.937	31.511
	1000.00	82.824	498.040	440.386	−473.714	57.654	−971.754	−580.426	−538.805	28.144
	1100.00	82.879	505.937	445.992	−465.429	65.939	−1021.959	−581.099	−534.611	25.387
	1200.00	82.923	513.150	451.292	−457.138	74.230	−1072.918	−581.877	−530.351	23.086
	1300.00	82.958	519.789	456.309	−448.844	82.524	−1124.570	−582.769	−526.022	21.136
	1400.00	82.987	525.938	461.066	−440.547	90.821	−1176.860	−583.786	−521.620	19.462
	1500.00	83.012	531.664	465.583	−432.247	99.121	−1229.743	−584.938	−517.140	18.008
	1600.00	83.034	537.022	469.883	−423.945	107.423	−1283.180	−599.603	−512.328	16.726
	1700.00	83.053	542.057	473.982	−415.640	115.728	−1337.137	−600.726	−506.838	15.573
	1800.00	83.070	546.805	477.897	−407.334	124.034	−1391.582	−601.855	−501.283	14.547
	1900.00	83.086	551.296	481.643	−399.026	132.342	−1446.489	−602.989	−495.665	13.627
	2000.00	83.100	555.558	485.233	−390.717	140.651	−1501.834	−604.130	−489.987	12.797

References

Phase	H / S	C_p
GAS	Pa2	Pa2

GdCl3 GADOLINIUM CHLORIDE 263.608

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	88.003	151.419	151.419	−1008.001	0.000	−1053.147	−1008.001	−933.104	163.476
	300.00	88.047	151.964	151.421	−1007.838	0.163	−1053.427	−1008.001	−932.640	162.387
	400.00	90.787	177.654	154.905	−998.901	9.100	−1069.963	−1007.349	−907.593	118.520
	500.00	93.897	198.243	161.579	−989.669	18.332	−1088.790	−1006.275	−882.775	92.223
	600.00	97.154	215.649	169.176	−980.117	27.884	−1109.506	−1005.042	−858.188	74.712
	700.00	100.480	230.874	176.924	−970.236	37.765	−1131.848	−1003.634	−833.821	62.220
	800.00	103.843	244.511	184.534	−960.020	47.981	−1155.628	−1002.020	−809.670	52.866
	875.00	106.380	253.928	190.083	−952.137	55.864	−1174.324	−1000.663	−791.697	47.262
			46.526		40.710					
LIQ	875.00	139.515	300.454	190.083	−911.427	96.574	−1174.324	−959.953	−791.697	47.262
	900.00	139.515	304.384	193.204	−907.939	100.062	−1181.884	−958.653	−786.909	45.671
	1000.00	139.515	319.084	205.070	−893.987	114.014	−1213.071	−953.519	−768.102	40.122
	1100.00	139.515	332.381	216.049	−880.036	127.965	−1245.655	−948.497	−749.804	35.605
	1200.00	139.515	344.520	226.256	−866.084	141.917	−1279.508	−943.590	−731.959	31.861
	1300.00	139.515	355.687	235.789	−852.133	155.868	−1314.526	−938.806	−714.518	28.710

References

Phase	H / S	C_p
SOL	Pa2	Dw4e
LIQ	Dw4	Dw4

263.608

GADOLINIUM CHLORIDE (GAS) **GdCl3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	78.201	371.481	371.481	−696.636	0.000	−807.393	−696.636	−687.351	120.421
	300.00	78.259	371.965	371.483	−696.491	0.145	−808.081	−696.654	−687.293	119.668
	400.00	80.313	394.802	374.583	−688.548	8.088	−846.469	−696.996	−684.099	89.334
	500.00	81.273	412.838	380.494	−680.464	16.172	−886.883	−697.069	−680.867	71.130
	600.00	81.802	427.707	387.160	−672.308	24.328	−928.932	−697.233	−677.613	58.991
	700.00	82.128	440.343	393.877	−664.110	32.526	−972.350	−697.508	−674.323	50.319
	800.00	82.346	451.325	400.387	−655.886	40.750	−1016.945	−697.886	−670.987	43.811
	900.00	82.501	461.033	406.596	−647.643	48.993	−1062.573	−698.357	−667.597	38.746
	1000.00	82.617	469.732	412.483	−639.387	57.249	−1109.119	−698.919	−664.150	34.692
	1100.00	82.707	477.611	418.051	−631.120	65.516	−1156.492	−699.582	−660.642	31.371
	1200.00	82.780	484.810	423.318	−622.846	73.790	−1204.618	−700.352	−657.069	28.601
	1300.00	82.841	491.439	428.307	−614.565	82.071	−1253.435	−701.238	−653.427	26.255
	1400.00	82.892	497.580	433.038	−606.278	90.358	−1302.890	−702.250	−649.712	24.241
	1500.00	82.937	503.300	437.534	−597.986	98.650	−1352.937	−703.398	−645.920	22.493
	1600.00	82.978	508.654	441.813	−589.691	106.945	−1403.537	−718.060	−641.795	20.952
	1700.00	83.014	513.686	445.895	−581.391	115.245	−1454.657	−719.181	−636.994	19.572
	1800.00	83.047	518.432	449.794	−573.088	123.548	−1506.265	−720.308	−632.127	18.344
	1900.00	83.078	522.923	453.526	−564.782	131.854	−1558.335	−721.444	−627.197	17.243
	2000.00	83.107	527.185	457.103	−556.472	140.164	−1610.842	−722.587	−622.208	16.250

References

Phase	H / S	C_p
GAS	Pa2	Pa2

GdF3 GADOLINIUM FLUORIDE 214.245

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	88.393	114.771	114.771	−1699.122	0.000	−1733.341	−1699.122	−1622.387	284.236
	300.00	88.596	115.319	114.773	−1698.958	0.164	−1733.554	−1699.114	−1621.911	282.400
	400.00	95.957	141.953	118.354	−1689.683	9.439	−1746.464	−1697.743	−1596.348	208.462
	500.00	99.713	163.807	125.327	−1679.882	19.240	−1761.785	−1695.788	−1571.222	164.144
	600.00	102.050	182.207	133.314	−1669.786	29.336	−1779.110	−1693.768	−1546.498	134.635
	700.00	103.717	198.070	141.458	−1659.494	39.628	−1798.143	−1691.759	−1522.113	113.581
	800.00	105.027	212.007	149.423	−1649.054	50.068	−1818.660	−1689.773	−1498.013	97.810
	900.00	106.129	224.443	157.080	−1638.495	60.627	−1840.494	−1687.812	−1474.161	85.558
	1000.00	107.102	235.676	164.387	−1627.833	71.289	−1863.509	−1685.876	−1450.526	75.768
	1100.00	107.991	245.926	171.341	−1617.078	82.044	−1887.597	−1683.979	−1427.084	67.767
	1200.00	108.823	255.359	177.954	−1606.237	92.885	−1912.667	−1682.129	−1403.812	61.106
	1300.00	109.614	264.101	184.249	−1595.315	103.807	−1938.645	−1680.334	−1380.692	55.477
	1348.00	109.983	268.082	187.163	−1590.044	109.078	−1951.418	−1679.495	−1369.643	53.073
			4.454		6.004					
SOL−B	1348.00	130.855	272.536	187.163	−1584.040	115.082	−1951.418	−1673.491	−1369.643	53.073
	1400.00	130.855	277.489	190.427	−1577.236	121.886	−1965.720	−1671.526	−1357.960	50.666
	1500.00	130.855	286.517	196.535	−1564.150	134.972	−1993.925	−1667.863	−1335.691	46.513
	1505.00	130.855	286.952	196.835	−1563.496	135.626	−1995.359	−1667.684	−1334.584	46.320
			34.835		52.426					
LIQ	1505.00	127.821	321.787	196.835	−1511.070	188.052	−1995.359	−1615.258	−1334.584	46.320
	1600.00	127.821	329.611	204.489	−1498.927	200.195	−2026.304	−1625.588	−1316.710	42.986
	1700.00	127.821	337.360	212.079	−1486.145	212.977	−2059.656	−1622.224	−1297.509	39.868
	1800.00	127.821	344.666	219.244	−1473.363	225.759	−2093.761	−1618.876	−1278.504	37.101

References

Phase	H / S	C_p
SOL−A	Pa2	Pa2
SOL−B	Pa2	Pa2
LIQ	Pa2	Pa2

214.245

GADOLINIUM FLUORIDE (GAS) **GdF3**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	71.523	335.340	335.340	−1246.832	0.000	−1346.814	−1246.832	−1235.860	216.518
	300.00	71.651	335.783	335.341	−1246.700	0.132	−1347.434	−1246.855	−1235.792	215.170
	400.00	76.177	357.107	338.218	−1239.277	7.555	−1382.119	−1247.337	−1232.003	160.883
	500.00	78.324	374.361	343.777	−1231.540	15.292	−1418.721	−1247.446	−1228.157	128.305
	600.00	79.534	388.757	350.108	−1223.642	23.190	−1456.897	−1247.625	−1224.285	106.583
	700.00	80.301	401.079	356.530	−1215.648	31.184	−1496.403	−1247.913	−1220.373	91.065
	800.00	80.834	411.839	362.786	−1207.590	39.242	−1537.060	−1248.308	−1216.413	79.424
	900.00	81.229	421.383	368.776	−1199.486	47.346	−1578.731	−1248.802	−1212.398	70.366
	1000.00	81.539	429.958	374.473	−1191.347	55.485	−1621.305	−1249.389	−1208.322	63.116
	1100.00	81.793	437.742	379.876	−1183.180	63.652	−1664.696	−1250.081	−1204.183	57.182
	1200.00	82.010	444.868	384.999	−1174.989	71.843	−1708.831	−1250.881	−1199.976	52.234
	1300.00	82.199	451.440	389.861	−1166.779	80.053	−1753.651	−1251.798	−1195.697	48.044
	1400.00	82.370	457.538	394.480	−1158.550	88.282	−1799.104	−1252.841	−1191.344	44.450
	1500.00	82.526	463.227	398.875	−1150.305	96.527	−1845.145	−1254.018	−1186.911	41.332
	1600.00	82.671	468.557	403.066	−1142.045	104.787	−1891.737	−1268.707	−1182.143	38.593
	1700.00	82.808	473.573	407.067	−1133.771	113.061	−1938.846	−1269.850	−1176.698	36.156
	1800.00	82.939	478.310	410.895	−1125.484	121.348	−1986.442	−1270.997	−1171.186	33.987
	1900.00	83.064	482.798	414.562	−1117.184	129.648	−2034.500	−1272.147	−1165.609	32.045
	2000.00	83.184	487.062	418.081	−1108.871	137.961	−2082.995	−1273.299	−1159.972	30.295

References

Phase	H / S	C_p
GAS	Pa2	Pa2

GdI3 GADOLINIUM IODIDE 537.963

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	98.644	226.354	226.354	−594.128	0.000	−661.616	−594.128	−589.415	103.263
	300.00	98.746	226.965	226.356	−593.945	0.183	−662.035	−594.165	−589.386	102.621
	400.00	102.393	255.945	230.283	−583.863	10.265	−686.241	−619.625	−586.723	76.618
	500.00	104.127	279.000	237.800	−573.528	20.600	−713.028	−684.382	−572.268	59.784
	600.00	105.109	298.079	246.302	−563.062	31.066	−741.909	−682.409	−550.031	47.884
	700.00	105.736	314.332	254.889	−552.518	41.610	−772.550	−680.467	−528.122	39.409
	800.00	106.173	328.481	263.223	−541.921	52.207	−804.706	−678.573	−506.488	33.070
	900.00	106.500	341.006	271.183	−531.287	62.841	−838.192	−676.735	−485.089	28.154
	1000.00	106.759	352.241	278.736	−520.623	73.505	−872.864	−674.959	−463.890	24.231
	1013.00	106.789	353.620	279.689	−519.235	74.893	−877.452	−674.733	−461.148	23.779
			0.908		0.920					
SOL−B	1013.00	127.821	354.528	279.689	−518.315	75.813	−877.452	−673.813	−461.148	23.779
	1100.00	127.821	365.060	286.030	−507.195	86.933	−908.761	−670.521	−443.022	21.037
	1200.00	127.821	376.182	293.086	−494.413	99.715	−945.831	−666.839	−422.503	18.391
	1203.00	127.821	376.501	293.293	−494.029	100.099	−946.960	−666.731	−421.892	18.319
			44.884		53.995					
LIQ	1203.00	155.854	421.385	293.293	−440.034	154.094	−946.960	−612.736	−421.892	18.319
	1300.00	155.854	433.471	303.308	−424.916	169.212	−988.428	−606.562	−406.748	16.343

References

Phase	H / S	C_p
SOL−A	Nb1/Pa2	Dw4,Pa2
SOL−B	Dw4,Pa2	Dw4,Pa2
LIQ	Dw4	Dw4

537.963

GADOLINIUM IODIDE (GAS) **GdI3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	81.496	427.614	427.614	−316.729	0.000	−444.222	−316.729	−372.022	65.177
	300.00	81.516	428.118	427.615	−316.578	0.151	−445.014	−316.798	−372.365	64.834
	400.00	82.220	451.680	430.823	−308.386	8.343	−489.058	−344.148	−389.540	50.869
	500.00	82.546	470.065	436.900	−300.146	16.583	−535.179	−411.000	−394.419	41.205
	600.00	82.724	485.133	443.721	−291.882	24.847	−582.962	−411.229	−391.083	34.047
	700.00	82.832	497.893	450.572	−283.604	33.125	−632.129	−411.553	−387.701	28.931
	800.00	82.903	508.959	457.194	−275.317	41.412	−682.484	−411.968	−384.266	25.090
	900.00	82.952	518.727	463.499	−267.024	49.705	−733.878	−412.472	−380.774	22.100
	1000.00	82.988	527.468	469.466	−258.727	58.002	−786.195	−413.062	−377.221	19.704
	1100.00	83.014	535.379	475.104	−250.427	66.302	−839.344	−413.753	−373.604	17.741
	1200.00	83.035	542.603	480.433	−242.124	74.605	−893.248	−414.551	−369.920	16.102
	1300.00	83.052	549.250	485.474	−233.820	82.909	−947.845	−415.465	−366.165	14.713
	1400.00	83.065	555.406	490.252	−225.514	91.215	−1003.082	−416.507	−362.334	13.519
	1500.00	83.076	561.137	494.789	−217.207	99.522	−1058.912	−417.687	−358.424	12.481
	1600.00	83.086	566.499	499.105	−208.899	107.830	−1115.297	−432.382	−354.180	11.563
	1700.00	83.094	571.536	503.219	−200.590	116.139	−1172.201	−433.537	−349.257	10.731
	1800.00	83.101	576.286	507.148	−192.280	124.449	−1229.595	−434.699	−344.266	9.990
	1900.00	83.107	580.779	510.906	−183.970	132.759	−1287.450	−435.870	−339.210	9.326
	2000.00	83.113	585.042	514.507	−175.659	141.070	−1345.743	−437.049	−334.092	8.726

References

Phase	H / S	C_p
GAS	Pa2	Pa2

Gd_2O_3 GADOLINIUM OXIDE (CUBIC) 362.498

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL–C	298.15	105.518	150.624	150.624	–1826.902	0.000	–1871.811	–1826.902	–1739.546	304.761
	300.00	105.753	151.277	150.626	–1826.707	0.195	–1872.090	–1826.925	–1739.004	302.788
	400.00	114.469	183.047	154.898	–1815.643	11.259	–1888.861	–1826.486	–1709.698	223.264
	500.00	119.258	209.146	163.217	–1803.938	22.964	–1908.511	–1824.973	–1680.669	175.578
	600.00	122.553	231.195	172.757	–1791.839	35.063	–1930.556	–1823.347	–1651.961	143.816
	700.00	125.148	250.288	182.499	–1779.450	47.452	–1954.652	–1821.755	–1623.524	121.149
	800.00	127.348	267.146	192.047	–1766.823	60.079	–1980.540	–1820.222	–1595.310	104.163
	900.00	129.277	282.259	201.245	–1753.989	72.913	–2008.023	–1818.748	–1567.286	90.963
	1000.00	130.978	295.970	210.043	–1740.975	85.927	–2036.945	–1817.338	–1539.422	80.411
	1100.00	132.459	308.525	218.433	–1727.801	99.101	–2067.178	–1816.026	–1511.694	71.784
	1200.00	133.705	320.105	226.429	–1714.491	112.411	–2098.617	–1814.836	–1484.082	64.600
	1300.00	134.694	330.848	234.053	–1701.069	125.833	–2131.171	–1813.804	–1456.562	58.525
	1400.00	135.395	340.858	241.329	–1687.562	139.340	–2164.762	–1812.971	–1429.114	53.321
	1500.00	135.773	350.214	248.279	–1674.000	152.902	–2199.321	–1812.385	–1401.718	48.812
	1550.00	135.831	354.667	251.640	–1667.210	159.692	–2216.944	–1819.665	–1387.948	46.774

References

Phase	H / S	C_p	Remarks
SOL–C	Pa1	Pa1	TPT (cubic – monoclinic): uncertain

362.498

GADOLINIUM OXIDE (MONOCLINIC) **Gd2O3**[M]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−M	298.15	106.628	156.900	156.900	−1819.622	0.000	−1866.402	−1819.622	−1734.137	303.814
	300.00	106.804	157.560	156.902	−1819.425	0.197	−1866.693	−1819.643	−1733.607	301.848
	400.00	113.515	189.313	161.186	−1808.371	11.251	−1884.096	−1819.215	−1704.933	222.641
	500.00	117.398	215.091	169.470	−1796.812	22.810	−1904.357	−1817.847	−1676.516	175.144
	600.00	120.168	236.751	178.927	−1784.928	34.694	−1926.978	−1816.435	−1648.383	143.505
	700.00	122.413	255.448	188.553	−1772.795	46.827	−1951.609	−1815.100	−1620.481	120.922
	800.00	124.378	271.925	197.965	−1760.454	59.168	−1977.994	−1813.853	−1592.765	103.997
	900.00	126.180	286.680	207.016	−1747.925	71.697	−2005.937	−1812.684	−1565.200	90.842
	1000.00	127.881	300.063	215.662	−1735.221	84.401	−2035.284	−1811.585	−1537.761	80.324
	1100.00	129.515	312.328	223.900	−1722.351	97.271	−2065.912	−1810.576	−1510.428	71.724
	1200.00	131.105	323.666	231.747	−1709.320	110.302	−2097.719	−1809.665	−1483.183	64.561
	1300.00	132.663	334.222	239.229	−1696.131	123.491	−2130.619	−1808.866	−1456.010	58.503
	1400.00	134.198	344.109	246.371	−1682.788	136.834	−2164.541	−1808.197	−1428.893	53.313
	1500.00	135.716	353.420	253.200	−1669.292	150.330	−2199.422	−1807.677	−1401.819	48.816
	1600.00	137.221	362.227	259.741	−1655.645	163.977	−2235.208	−1834.058	−1374.272	44.865
	1700.00	138.717	370.591	266.018	−1641.848	177.774	−2271.853	−1833.229	−1345.560	41.344
	1800.00	140.204	378.562	272.051	−1627.902	191.720	−2309.313	−1832.288	−1316.900	38.215
	1900.00	141.685	386.182	277.859	−1613.808	205.814	−2347.553	−1831.234	−1288.295	35.418
	2000.00	143.161	393.487	283.459	−1599.565	220.057	−2386.539	−1830.066	−1259.750	32.901

References

Phase	H / S	C_p	Remarks
SOL−M	Nb1/Pa1	Pa1	Ku1 MPT= 2613.

208.702

GADOLINIUM CHLORIDE OXIDE **GdOCl**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	68.351	95.395	95.395	−979.002	0.000	−1007.444	−979.002	−923.342	161.766
	300.00	68.424	95.818	95.397	−978.875	0.127	−1007.621	−979.002	−922.997	160.708
	400.00	71.569	115.964	98.122	−971.865	7.137	−1018.251	−978.296	−904.406	118.103
	500.00	73.906	132.194	103.365	−964.587	14.415	−1030.685	−977.134	−886.066	92.567
	600.00	75.925	145.851	109.337	−957.094	21.908	−1044.604	−975.905	−867.967	75.563
	700.00	77.793	157.696	115.418	−949.407	29.595	−1059.795	−974.642	−850.076	63.433
	800.00	79.581	168.201	121.372	−941.538	37.464	−1076.099	−973.338	−832.370	54.348
	900.00	81.323	177.676	127.110	−933.493	45.509	−1093.401	−971.984	−814.830	47.291
	1000.00	83.036	186.333	132.605	−925.275	53.727	−1111.607	−970.573	−797.443	41.654

References

Phase	H / S	C_p
SOL	Nb1/e	e

Ge GERMANIUM 72.610

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	23.355	31.087	31.087	0.000	0.000	−9.269	0.000	0.000	0.000
	300.00	23.385	31.232	31.088	0.043	0.043	−9.326	0.000	0.000	0.000
	400.00	24.445	38.126	32.020	2.442	2.442	−12.808	0.000	0.000	0.000
	500.00	24.940	43.640	33.812	4.914	4.914	−16.906	0.000	0.000	0.000
	600.00	25.212	48.213	35.842	7.423	7.423	−21.505	0.000	0.000	0.000
	700.00	25.577	52.123	37.895	9.960	9.960	−26.526	0.000	0.000	0.000
	800.00	25.991	55.565	39.893	12.538	12.538	−31.914	0.000	0.000	0.000
	900.00	26.405	58.651	41.808	15.158	15.158	−37.627	0.000	0.000	0.000
	1000.00	27.209	61.478	43.636	17.842	17.842	−43.636	0.000	0.000	0.000
	1100.00	27.944	64.106	45.379	20.600	20.600	−49.916	0.000	0.000	0.000
	1200.00	28.680	66.569	47.043	23.431	23.431	−56.451	0.000	0.000	0.000
	1210.40	28.756	66.817	47.212	23.730	23.730	−57.145	0.000	0.000	0.000
			30.523		36.945					
LIQ	1210.40	27.614	97.339	47.212	60.675	60.675	−57.145	0.000	0.000	0.000
	1300.00	27.614	99.312	50.735	63.149	63.149	−65.956	0.000	0.000	0.000
	1400.00	27.614	101.358	54.279	65.910	65.910	−75.991	0.000	0.000	0.000
	1500.00	27.614	103.263	57.482	68.672	68.672	−86.223	0.000	0.000	0.000
	1600.00	27.614	105.045	60.400	71.433	71.433	−96.639	0.000	0.000	0.000
	1700.00	27.614	106.719	63.076	74.195	74.195	−107.228	0.000	0.000	0.000
	1800.00	27.614	108.298	65.544	76.956	76.956	−117.980	0.000	0.000	0.000
	1900.00	27.614	109.791	67.834	79.718	79.718	−128.885	0.000	0.000	0.000
	2000.00	27.614	111.207	69.968	82.479	82.479	−139.936	0.000	0.000	0.000
	2100.00	27.614	112.555	71.964	85.240	85.240	−151.124	0.000	0.000	0.000
	2200.00	27.614	113.839	73.838	88.002	88.002	−162.444	0.000	0.000	0.000
	2300.00	27.614	115.067	75.604	90.763	90.763	−173.890	0.000	0.000	0.000
	2400.00	27.614	116.242	77.273	93.525	93.525	−185.456	0.000	0.000	0.000
	2500.00	27.614	117.369	78.855	96.286	96.286	−197.137	0.000	0.000	0.000
	2600.00	27.614	118.452	80.357	99.048	99.048	−208.928	0.000	0.000	0.000
	2700.00	27.614	119.495	81.787	101.809	101.809	−220.826	0.000	0.000	0.000
	2800.00	27.614	120.499	83.152	104.571	104.571	−232.826	0.000	0.000	0.000
	2900.00	27.614	121.468	84.457	107.332	107.332	−244.925	0.000	0.000	0.000
	3000.00	27.614	122.404	85.706	110.093	110.093	−257.119	0.000	0.000	0.000
	3100.00	27.614	123.309	86.905	112.855	112.855	−269.405	0.000	0.000	0.000
	3104.00	27.614	123.345	86.952	112.965	112.965	−269.898	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks	
SOL	Hu1	Hu1	Hu1	MPT= 1210.4
LIQ	Hu1	Hu1	Hu1	BPT= 3104., L= 331.0 kJ

72.610

GERMANIUM (GAS)

Ge[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	30.732	167.900	167.900	374.468	0.000	324.408	374.468	333.677	−58.459
	300.00	30.738	168.091	167.901	374.525	0.057	324.098	374.482	333.424	−58.054
	400.00	31.070	176.979	169.111	377.615	3.147	306.824	375.173	319.632	−41.740
	500.00	30.387	183.855	171.400	380.696	6.228	288.768	375.782	305.674	−31.934
	600.00	29.245	189.297	173.946	383.678	9.210	270.100	376.256	291.605	−25.386
	700.00	28.086	193.717	176.465	386.544	12.076	250.942	376.584	277.469	−20.705
	800.00	27.035	197.397	178.858	389.299	14.831	231.381	376.761	263.296	−17.191
	900.00	26.129	200.528	181.096	391.956	17.488	211.481	376.798	249.109	−14.458
	1000.00	25.371	203.240	183.178	394.530	20.062	191.290	376.688	234.926	−12.271
	1100.00	24.754	205.628	185.113	397.035	22.567	170.844	376.435	220.760	−10.483
	1200.00	24.265	207.760	186.913	399.485	25.017	150.173	376.054	206.624	−8.994
	1300.00	23.890	209.687	188.592	401.892	27.424	129.299	338.743	195.255	−7.845
	1400.00	23.614	211.447	190.162	404.266	29.798	108.241	338.356	184.232	−6.874
	1500.00	23.419	213.069	191.636	406.617	32.149	87.014	337.946	173.237	−6.033
	1600.00	23.290	214.576	193.023	408.952	34.484	65.631	337.519	162.270	−5.298
	1700.00	23.210	215.985	194.333	411.277	36.809	44.102	337.082	151.330	−4.650
	1800.00	23.163	217.311	195.573	413.596	39.128	22.437	336.639	140.417	−4.075
	1900.00	23.132	218.562	196.750	415.910	41.442	0.642	336.193	129.528	−3.561
	2000.00	23.100	219.748	197.871	418.222	43.754	−21.274	335.743	118.662	−3.099
	2100.00	23.108	220.875	198.940	420.532	46.064	−43.305	335.292	107.819	−2.682
	2200.00	23.129	221.950	199.961	422.844	48.376	−65.447	334.842	96.998	−2.303
	2300.00	23.157	222.979	200.940	425.158	50.690	−87.694	334.395	86.197	−1.958
	2400.00	23.189	223.965	201.879	427.476	53.008	−110.041	333.951	75.415	−1.641
	2500.00	23.222	224.913	202.781	429.796	55.328	−132.485	333.510	64.652	−1.351
	2600.00	23.254	225.824	203.650	432.120	57.652	−155.023	333.072	53.906	−1.083
	2700.00	23.284	226.702	204.488	434.447	59.979	−177.649	332.638	43.177	−0.835
	2800.00	23.312	227.550	205.296	436.777	62.309	−200.362	332.206	32.464	−0.606
	2900.00	23.338	228.368	206.078	439.109	64.641	−223.158	331.777	21.767	−0.392
	3000.00	23.360	229.160	206.834	441.444	66.976	−246.035	331.351	11.084	−0.193
	3100.00	23.380	229.926	207.567	443.781	69.313	−268.989	330.926	0.415	−0.007
	3200.00	23.397	230.668	208.277	446.120	71.652	−292.019	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1

GeBr4[g] GERMANIUM TETRABROMIDE (GAS) 392.226

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	101.840	396.167	396.167	–299.993	0.000	–418.110	–299.993	–318.079	55.726
	300.00	101.915	396.797	396.169	–299.805	0.188	–418.844	–300.128	–318.191	55.402
	400.00	104.530	426.530	400.205	–289.463	10.530	–460.075	–361.150	–311.634	40.695
	500.00	105.701	449.996	407.899	–278.945	21.048	–503.943	–360.487	–299.331	31.271
	600.00	106.304	469.327	416.574	–268.341	31.652	–549.937	–359.829	–287.162	25.000
	700.00	106.638	485.741	425.312	–257.693	42.300	–597.711	–359.188	–275.102	20.528
	800.00	106.829	499.994	433.776	–247.018	52.975	–647.014	–358.588	–263.131	17.181
	900.00	106.936	512.584	441.847	–236.330	63.663	–697.655	–358.034	–251.233	14.581
	1000.00	106.992	523.854	449.494	–225.633	74.360	–749.487	–357.552	–239.393	12.505
	1100.00	107.015	534.052	456.725	–214.932	85.061	–802.390	–357.155	–227.597	10.808
	1200.00	107.014	543.364	463.562	–204.231	95.762	–856.268	–356.844	–215.833	9.395

References

Phase	H / S	C_p
GAS	Pa2	Pa2

GeCl[g] GERMANIUM MONOCHLORIDE (GAS) 108.063

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	36.980	245.861	245.861	73.028	0.000	–0.275	73.028	42.254	–7.403
	300.00	37.044	246.090	245.862	73.096	0.068	–0.730	73.022	42.063	–7.324
	400.00	39.215	257.093	247.347	76.926	3.898	–25.911	72.719	31.791	–4.151
	500.00	40.100	265.953	250.212	80.898	7.870	–52.078	72.434	21.592	–2.256
	600.00	40.480	273.302	253.466	84.930	11.902	–79.051	72.139	11.451	–0.997
	700.00	40.620	279.555	256.757	88.987	15.959	–106.702	71.820	1.360	–0.102
	800.00	40.633	284.981	259.954	93.050	20.022	–134.935	71.453	–8.681	0.567
	900.00	40.572	289.764	263.005	97.111	24.083	–163.677	71.031	–18.673	1.084
	1000.00	40.465	294.033	265.899	101.163	28.135	–192.871	70.528	–28.614	1.495
	1100.00	40.328	297.884	268.634	105.203	32.175	–222.470	69.933	–38.500	1.828
	1200.00	40.170	301.386	271.220	109.228	36.200	–252.436	69.245	–48.328	2.104
	1300.00	39.998	304.595	273.665	113.236	40.208	–282.737	31.649	–55.364	2.225
	1400.00	39.816	307.552	275.982	117.227	44.199	–313.346	30.988	–62.033	2.314
	1500.00	39.625	310.293	278.179	121.199	48.171	–344.240	30.304	–68.653	2.391
	1600.00	39.429	312.844	280.267	125.152	52.124	–375.399	29.598	–75.227	2.456
	1700.00	39.229	315.228	282.254	129.085	56.057	–406.803	28.868	–81.757	2.512
	1800.00	39.024	317.465	284.148	132.997	59.969	–438.439	28.114	–88.242	2.561
	1900.00	38.817	319.569	285.958	136.889	63.861	–470.292	27.336	–94.686	2.603
	2000.00	38.608	321.555	287.689	140.761	67.733	–502.349	26.533	–101.087	2.640

References

Phase	H / S	C_p
GAS	Pa2	Pa2

143.515 GERMANIUM DICHLORIDE (GAS) **GeCl2**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	53.785	295.826	295.826	−171.000	0.000	−259.201	−171.000	−183.410	32.133
	300.00	53.836	296.159	295.827	−170.900	0.100	−259.748	−171.007	−183.487	31.948
	400.00	55.643	311.931	297.965	−165.414	5.586	−290.186	−171.386	−187.591	24.497
	500.00	56.492	324.449	302.054	−159.802	11.198	−322.027	−171.817	−191.593	20.016
	600.00	56.962	334.794	306.673	−154.128	16.872	−355.004	−172.287	−195.505	17.020
	700.00	57.255	343.598	311.335	−148.416	22.584	−388.934	−172.789	−199.336	14.875
	800.00	57.452	351.257	315.857	−142.680	28.320	−423.686	−173.336	−203.091	13.261
	900.00	57.594	358.033	320.174	−136.927	34.073	−459.157	−173.929	−206.776	12.001
	1000.00	57.702	364.107	324.269	−131.162	39.838	−495.269	−174.589	−210.391	10.990
	1100.00	57.788	369.610	328.144	−125.387	45.613	−531.959	−175.326	−213.936	10.159
	1200.00	57.858	374.642	331.813	−119.605	51.395	−569.175	−176.139	−217.410	9.464
	1300.00	57.918	379.275	335.288	−113.816	57.184	−606.874	−213.841	−218.084	8.763
	1400.00	57.969	383.569	338.585	−108.022	62.978	−645.019	−214.589	−218.382	8.148
	1500.00	58.015	387.570	341.719	−102.222	68.778	−683.578	−215.340	−218.627	7.613
	1600.00	58.057	391.316	344.703	−96.419	74.581	−722.524	−216.094	−218.821	7.144
	1700.00	58.095	394.837	347.549	−90.611	80.389	−761.834	−216.851	−218.969	6.728
	1800.00	58.130	398.158	350.269	−84.800	86.200	−801.485	−217.611	−219.071	6.357
	1900.00	58.164	401.302	352.873	−78.985	92.015	−841.460	−218.375	−219.132	6.024
	2000.00	58.195	404.286	355.370	−73.167	97.833	−881.740	−219.144	−219.152	5.724

References

Phase	H / S	C_p
GAS	Pa2	Pa2

GeCl3[g] GERMANIUM TRICHLORIDE (GAS) 178.968

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	76.257	335.202	335.202	−320.846	0.000	−420.786	−320.846	−311.734	54.615
	300.00	76.338	335.674	335.203	−320.705	0.141	−421.407	−320.842	−311.678	54.268
	400.00	79.189	358.084	338.239	−312.908	7.938	−456.142	−320.646	−308.653	40.306
	500.00	80.523	375.914	344.052	−304.915	15.931	−492.872	−320.481	−305.675	31.934
	600.00	81.259	390.666	350.627	−296.823	24.023	−531.222	−320.350	−302.727	26.355
	700.00	81.713	403.228	357.267	−288.673	32.173	−570.933	−320.252	−299.798	22.371
	800.00	82.017	414.161	363.710	−280.485	40.361	−611.814	−320.201	−296.880	19.384
	900.00	82.234	423.834	369.863	−272.272	48.574	−653.723	−320.196	−293.966	17.061
	1000.00	82.396	432.507	375.702	−264.040	56.806	−696.548	−320.260	−291.048	15.203
	1100.00	82.523	440.366	381.229	−255.794	65.052	−740.197	−320.402	−288.121	13.682
	1200.00	82.625	447.551	386.460	−247.537	73.309	−784.598	−320.622	−285.177	12.413
	1300.00	82.711	454.168	391.418	−239.270	81.576	−829.689	−357.732	−279.481	11.230
	1400.00	82.784	460.301	396.121	−230.995	89.851	−875.416	−357.890	−273.456	10.203
	1500.00	82.849	466.015	400.593	−222.713	98.133	−921.735	−358.053	−267.420	9.312
	1600.00	82.906	471.363	404.850	−214.425	106.421	−968.607	−358.221	−261.372	8.533
	1700.00	82.958	476.391	408.912	−206.132	114.714	−1015.997	−358.394	−255.313	7.845
	1800.00	83.005	481.134	412.794	−197.834	123.012	−1063.875	−358.573	−249.245	7.233
	1900.00	83.050	485.623	416.510	−189.531	131.315	−1112.215	−358.758	−243.166	6.685
	2000.00	83.091	489.884	420.073	−181.224	139.622	−1160.992	−358.949	−237.077	6.192

References

Phase	H / S	C_p
GAS	Pa2	Pa2

214.421 GERMANIUM TETRACHLORIDE (GAS) **GeCl4**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	95.917	348.390	348.390	−499.988	0.000	−603.860	−499.988	−461.547	80.861
	300.00	96.056	348.984	348.392	−499.810	0.178	−604.505	−499.979	−461.309	80.321
	400.00	100.945	377.386	352.231	−489.926	10.062	−640.880	−499.428	−448.499	58.568
	500.00	103.252	400.186	359.618	−479.704	20.284	−679.797	−498.820	−435.836	45.531
	600.00	104.543	419.135	368.003	−469.309	30.679	−720.790	−498.204	−423.297	36.851
	700.00	105.355	435.316	376.492	−458.811	41.177	−763.532	−497.597	−410.861	30.659
	800.00	105.910	449.423	384.745	−448.246	51.742	−807.784	−497.021	−398.510	26.020
	900.00	106.317	461.922	392.639	−437.634	62.354	−853.363	−496.480	−386.229	22.416
	1000.00	106.632	473.140	400.138	−426.986	73.002	−900.126	−495.998	−374.006	19.536
	1100.00	106.887	483.316	407.244	−416.309	83.679	−947.957	−495.587	−361.827	17.182
	1200.00	107.100	492.625	413.977	−405.610	94.378	−996.760	−495.246	−349.682	15.221
	1300.00	107.284	501.206	420.361	−394.890	105.098	−1046.457	−531.791	−334.833	13.454
	1400.00	107.448	509.162	426.423	−384.154	115.834	−1096.981	−531.377	−319.698	11.928
	1500.00	107.596	516.580	432.189	−373.401	126.587	−1148.272	−530.964	−304.592	10.607
	1600.00	107.732	523.529	437.683	−362.635	137.353	−1200.281	−530.551	−289.514	9.452
	1700.00	107.859	530.064	442.927	−351.855	148.133	−1252.964	−530.139	−274.462	8.433
	1800.00	107.978	536.232	447.941	−341.063	158.925	−1306.282	−529.729	−259.434	7.529
	1900.00	108.093	542.074	452.743	−330.260	169.728	−1360.200	−529.322	−244.429	6.720
	2000.00	108.202	547.621	457.349	−319.445	180.543	−1414.687	−528.919	−229.445	5.992

References

Phase	H / S	C_p	Remarks	
GAS	Pa2	Pa2	Pa2	NBPT= 356.

GeF[g] GERMANIUM MONOFLUORIDE (GAS) 91.608

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[	J / (K mol)	]	[		kJ / mol		]	[−]
GAS	298.15	34.781	234.008	234.008	−66.601	0.000	−136.370	−66.601	−96.870	16.971
	300.00	34.863	234.223	234.008	−66.537	0.064	−136.803	−66.609	−97.058	16.899
	400.00	37.678	244.700	235.418	−62.888	3.713	−160.768	−66.966	−107.151	13.993
	500.00	38.882	253.254	238.157	−59.052	7.549	−185.679	−67.284	−117.161	12.240
	600.00	39.451	260.400	241.285	−55.132	11.469	−211.372	−67.609	−127.106	11.066
	700.00	39.721	266.504	244.463	−51.172	15.429	−237.725	−67.961	−136.995	10.223
	800.00	39.831	271.817	247.557	−47.193	19.408	−264.647	−68.364	−146.830	9.587
	900.00	39.849	276.510	250.518	−43.209	23.392	−292.067	−68.823	−156.611	9.089
	1000.00	39.809	280.707	253.331	−39.225	27.376	−319.932	−69.364	−166.337	8.689
	1100.00	39.731	284.497	255.995	−35.248	31.353	−348.195	−69.997	−176.005	8.358
	1200.00	39.627	287.950	258.516	−31.280	35.321	−376.820	−70.724	−185.610	8.079
	1300.00	39.506	291.117	260.904	−27.323	39.278	−405.776	−108.359	−192.421	7.732
	1400.00	39.371	294.040	263.168	−23.379	43.222	−435.036	−109.058	−198.861	7.420
	1500.00	39.227	296.752	265.317	−19.449	47.152	−464.577	−109.778	−205.251	7.147
	1600.00	39.075	299.278	267.362	−15.534	51.067	−494.380	−110.519	−211.591	6.908
	1700.00	38.918	301.643	269.309	−11.635	54.966	−524.427	−111.282	−217.885	6.695
	1800.00	38.756	303.863	271.168	−7.751	58.850	−554.703	−112.066	−224.134	6.504
	1900.00	38.590	305.954	272.944	−3.884	62.717	−585.195	−112.871	−230.338	6.332
	2000.00	38.422	307.929	274.645	−0.033	66.568	−615.890	−113.698	−236.499	6.177

References

Phase	H / S	C_p
GAS	Pa2	Pa2

110.607 GERMANIUM DIFLUORIDE (GAS) **GeF2**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	47.848	270.781	270.781	−574.003	0.000	−654.736	−574.003	−585.004	102.490
	300.00	47.927	271.077	270.782	−573.914	0.089	−655.238	−574.016	−585.073	101.870
	400.00	51.349	285.373	272.708	−568.937	5.066	−683.086	−574.651	−588.660	76.871
	500.00	53.420	297.073	276.446	−563.690	10.313	−712.226	−575.239	−592.094	61.856
	600.00	54.708	306.935	280.728	−558.279	15.724	−742.440	−575.809	−595.412	51.835
	700.00	55.552	315.436	285.093	−552.763	21.240	−773.568	−576.381	−598.634	44.671
	800.00	56.130	322.894	289.362	−547.177	26.826	−805.492	−576.979	−601.772	39.292
	900.00	56.541	329.530	293.463	−541.542	32.461	−838.120	−577.612	−604.834	35.104
	1000.00	56.844	335.504	297.373	−535.872	38.131	−871.376	−578.307	−607.822	31.749
	1100.00	57.072	340.933	301.090	−530.176	43.827	−905.202	−579.074	−610.737	29.001
	1200.00	57.248	345.907	304.621	−524.460	49.543	−939.548	−579.917	−613.579	26.708
	1300.00	57.387	350.495	307.975	−518.728	55.275	−974.371	−617.650	−613.617	24.655
	1400.00	57.497	354.752	311.166	−512.983	61.020	−1009.636	−618.430	−613.277	22.882
	1500.00	57.586	358.722	314.206	−507.229	66.774	−1045.311	−619.214	−612.882	21.342
	1600.00	57.659	362.441	317.105	−501.467	72.536	−1081.371	−620.003	−612.434	19.994
	1700.00	57.719	365.938	319.876	−495.698	78.305	−1117.792	−620.797	−611.937	18.803
	1800.00	57.770	369.239	322.527	−489.923	84.080	−1154.552	−621.596	−611.393	17.742
	1900.00	57.812	372.363	325.069	−484.144	89.859	−1191.634	−622.401	−610.804	16.792
	2000.00	57.847	375.329	327.508	−478.361	95.642	−1229.020	−623.212	−610.172	15.936

References

Phase	H / S	C_p
GAS	Pa2	Pa2

GeF3[g] GERMANIUM TRIFLUORIDE (GAS) 129.605

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	66.180	297.717	297.717	−752.994	0.000	−841.758	−752.994	−741.795	129.959
	300.00	66.314	298.127	297.719	−752.871	0.123	−842.310	−753.002	−741.725	129.146
	400.00	72.022	318.056	300.397	−745.930	7.064	−873.153	−753.280	−737.919	96.362
	500.00	75.418	334.524	305.624	−738.544	14.450	−905.806	−753.410	−734.061	76.687
	600.00	77.514	348.474	311.633	−730.889	22.105	−939.974	−753.474	−730.185	63.568
	700.00	78.881	360.533	317.777	−723.065	29.929	−975.438	−753.512	−726.300	54.197
	800.00	79.815	371.131	323.798	−715.128	37.866	−1012.032	−753.562	−722.410	47.169
	900.00	80.479	380.572	329.591	−707.111	45.883	−1049.626	−753.637	−718.511	41.701
	1000.00	80.966	389.078	335.121	−699.038	53.956	−1088.115	−753.768	−714.602	37.327
	1100.00	81.333	396.813	340.383	−690.922	62.072	−1127.416	−753.969	−710.676	33.747
	1200.00	81.616	403.902	345.385	−682.774	70.220	−1167.456	−754.245	−706.729	30.763
	1300.00	81.839	410.444	350.141	−674.601	78.393	−1208.178	−791.410	−700.025	28.127
	1400.00	82.016	416.516	354.668	−666.408	86.586	−1249.530	−791.622	−692.988	25.856
	1500.00	82.159	422.179	358.982	−658.199	94.795	−1291.467	−791.840	−685.935	23.886
	1600.00	82.276	427.485	363.100	−649.977	103.017	−1333.953	−792.064	−678.867	22.163
	1700.00	82.372	432.476	367.035	−641.744	111.250	−1376.954	−792.296	−671.785	20.641
	1800.00	82.452	437.187	370.803	−633.503	119.491	−1420.439	−792.535	−664.690	19.289
	1900.00	82.519	441.647	374.415	−625.254	127.740	−1464.383	−792.782	−657.580	18.078
	2000.00	82.576	445.881	377.884	−616.999	135.995	−1508.761	−793.037	−650.458	16.988

References

Phase	H / S	C_p
GAS	Pa2	Pa2

148.604 GERMANIUM TETRAFLUORIDE (GAS) **GeF4**[g]

Phase	T	C_p	S	-(G-H298)/T	H	H-H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[-]
GAS	298.15	81.609	301.901	301.901	-1190.139	0.000	-1280.151	-1190.139	-1149.956	201.467
	300.00	81.788	302.407	301.903	-1189.988	0.151	-1280.710	-1190.147	-1149.706	200.182
	400.00	89.996	327.136	305.219	-1181.372	8.767	-1312.226	-1190.357	-1136.183	148.370
	500.00	95.270	347.830	311.729	-1172.088	18.051	-1346.003	-1190.272	-1122.645	117.282
	600.00	98.631	365.519	319.256	-1162.381	27.758	-1381.693	-1190.020	-1109.142	96.559
	700.00	100.861	380.901	326.988	-1152.400	37.739	-1419.031	-1189.675	-1095.689	81.761
	800.00	102.404	394.476	334.592	-1142.232	47.907	-1457.813	-1189.298	-1082.287	70.666
	900.00	103.510	406.605	341.932	-1131.933	58.206	-1497.878	-1188.915	-1068.934	62.039
	1000.00	104.329	417.555	348.956	-1121.539	68.600	-1539.095	-1188.565	-1055.622	55.140
	1100.00	104.950	427.529	355.652	-1111.074	79.065	-1581.356	-1188.271	-1042.343	49.497
	1200.00	105.432	436.683	362.028	-1100.554	89.585	-1624.573	-1188.038	-1029.087	44.795
	1300.00	105.813	445.137	368.100	-1089.991	100.148	-1668.670	-1224.686	-1013.118	40.708
	1400.00	106.119	452.991	373.887	-1079.394	110.745	-1713.581	-1224.376	-996.855	37.193
	1500.00	106.368	460.321	379.407	-1068.769	121.370	-1759.250	-1224.067	-980.614	34.148
	1600.00	106.573	467.192	384.682	-1058.122	132.017	-1805.629	-1223.761	-964.394	31.484
	1700.00	106.744	473.659	389.727	-1047.455	142.684	-1852.675	-1223.459	-948.193	29.134
	1800.00	106.888	479.764	394.561	-1036.774	153.365	-1900.349	-1223.164	-932.009	27.046
	1900.00	107.009	485.547	399.199	-1026.079	164.060	-1948.617	-1222.876	-915.842	25.178
	2000.00	107.113	491.038	403.655	-1015.372	174.767	-1997.449	-1222.596	-899.690	23.497

References

Phase	H / S	C_p
GAS	Pa2	Pa2

GeH4[g] GERMANIUM TETRAHYDRIDE (GAS) 76.642

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	45.017	217.259	217.259	90.793	0.000	26.017	90.793	113.210	−19.834
	300.00	45.357	217.539	217.260	90.877	0.084	25.615	90.727	113.350	−19.736
	400.00	58.081	232.546	219.220	96.124	5.331	3.105	87.763	121.368	−15.849
	500.00	65.157	246.327	223.288	102.313	11.520	−20.851	85.634	130.028	−13.584
	600.00	70.010	258.658	228.174	109.083	18.290	−46.112	84.038	139.064	−12.107
	700.00	73.814	269.745	233.335	116.280	25.487	−72.541	82.823	148.336	−11.069
	800.00	77.058	279.818	238.525	123.827	33.034	−100.027	81.886	157.762	−10.301
	900.00	79.976	289.065	243.634	131.681	40.888	−128.477	81.171	167.291	−9.709
	1000.00	82.693	297.633	248.610	139.816	49.023	−157.817	80.614	176.891	−9.240
	1100.00	85.277	305.637	253.435	148.215	57.422	−187.985	80.178	186.541	−8.858
	1200.00	87.772	313.164	258.101	156.868	66.075	−218.929	79.843	196.226	−8.541
	1300.00	90.203	320.286	262.613	165.768	74.975	−250.604	42.783	208.665	−8.384
	1400.00	92.589	327.058	266.977	174.907	84.114	−282.974	42.833	221.425	−8.261
	1500.00	94.940	333.527	271.199	184.284	93.491	−316.006	43.032	234.175	−8.155
	1600.00	97.266	339.728	275.290	193.895	103.102	−349.671	43.379	246.908	−8.061
	1700.00	99.571	345.694	279.257	203.737	112.944	−383.944	43.873	259.614	−7.977
	1800.00	101.861	351.451	283.109	213.808	123.015	−418.803	44.515	272.287	−7.902
	1900.00	104.139	357.019	286.853	224.108	133.315	−454.228	45.308	284.920	−7.833
	2000.00	106.406	362.418	290.497	234.636	143.843	−490.201	46.255	297.507	−7.770

References

Phase	H / S	C_p
GAS	Tk1	e

GeI4[g] GERMANIUM TETRAIODIDE (GAS) 580.228

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	104.137	428.928	428.928	−56.902	0.000	−184.787	−56.902	−106.263	18.617
	300.00	104.188	429.572	428.930	−56.709	0.193	−185.581	−56.954	−106.569	18.555
	400.00	105.936	459.823	433.042	−46.190	10.712	−230.119	−92.111	−121.539	15.871
	500.00	106.681	483.553	440.857	−35.554	21.348	−277.330	−180.335	−120.377	12.576
	600.00	107.031	503.038	449.645	−24.866	32.036	−326.689	−179.658	−108.449	9.441
	700.00	107.193	519.550	458.482	−14.154	42.748	−377.839	−179.008	−96.633	7.211
	800.00	107.257	533.869	467.030	−3.431	53.471	−430.526	−178.408	−84.907	5.544
	900.00	107.262	546.503	475.172	7.295	64.197	−484.557	−177.862	−73.252	4.251
	1000.00	107.232	557.803	482.880	18.020	74.922	−539.782	−177.396	−61.655	3.221
	1100.00	107.178	568.021	490.163	28.741	85.643	−596.082	−177.022	−50.100	2.379
	1200.00	107.109	577.344	497.046	39.456	96.358	−653.357	−176.741	−38.574	1.679

References

Phase	H / S	C_p
GAS	Nb1	Pa2

121.220

GERMANIUM 2–MAGNESIUM

GeMg2

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	67.823	86.190	86.190	–104.182	0.000	–129.880	–104.182	–101.126	17.717
	300.00	67.900	86.610	86.192	–104.056	0.126	–130.040	–104.192	–101.107	17.604
	400.00	71.245	106.634	88.899	–97.088	7.094	–139.742	–104.725	–99.998	13.058
	500.00	73.760	122.811	94.115	–89.834	14.348	–151.239	–105.280	–98.753	10.317
	600.00	75.948	136.455	100.063	–82.347	21.835	–164.220	–105.875	–97.392	8.479
	700.00	77.981	148.317	106.127	–74.649	29.533	–178.471	–106.524	–95.928	7.158
	800.00	79.932	158.858	112.072	–66.753	37.429	–193.839	–107.250	–94.366	6.161
	900.00	81.836	168.383	117.808	–58.665	45.517	–210.209	–108.061	–92.708	5.381
	1000.00	83.709	177.102	123.307	–50.387	53.795	–227.489	–126.880	–89.438	4.672
	1100.00	85.564	185.168	128.569	–41.923	62.259	–245.608	–127.701	–85.653	4.067
	1200.00	87.405	192.692	133.602	–33.275	70.907	–264.505	–128.411	–81.799	3.561
	1300.00	89.236	199.760	138.422	–24.443	79.739	–284.131	–165.824	–75.159	3.020
	1390.00	90.879	205.788	142.590	–16.338	87.844	–302.383	–420.242	–63.482	2.386

References

Phase	H / S	C_p	Remarks
SOL	Tk1	Tk1,e	Tk1 MPT= 1390., L= 102.9 kJ

189.990

GERMANIUM 2–NICKEL

GeNi2

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	69.896	90.793	90.793	–110.081	0.000	–137.151	–110.081	–110.069	19.284
	300.00	70.031	91.226	90.794	–109.952	0.129	–137.319	–110.091	–110.068	19.165
	400.00	75.542	112.196	93.616	–102.649	7.432	–147.527	–110.652	–109.977	14.362
	500.00	79.262	129.471	99.110	–94.900	15.181	–159.636	–111.288	–109.738	11.464
	600.00	82.276	144.196	105.427	–86.820	23.261	–173.337	–112.259	–109.346	9.519
	700.00	84.957	157.083	111.904	–78.456	31.625	–188.414	–113.067	–108.774	8.117
	800.00	87.461	168.592	118.284	–69.834	40.247	–204.708	–113.208	–108.150	7.061
	900.00	89.862	179.033	124.462	–60.967	49.114	–222.097	–113.264	–107.514	6.240
	1000.00	92.199	188.623	130.405	–51.864	58.217	–240.486	–113.339	–106.871	5.582
	1100.00	94.493	197.518	136.107	–42.529	67.552	–259.798	–113.451	–106.219	5.044
	1200.00	96.760	205.837	141.575	–32.966	77.115	–279.971	–113.602	–105.555	4.595
	1300.00	99.006	213.671	146.822	–23.178	86.903	–300.950	–150.596	–102.147	4.104
	1400.00	101.237	221.090	151.864	–13.165	96.916	–322.691	–150.544	–98.421	3.672

References

Phase	H / S	C_p
SOL	P2/Ku1	e

GeO[g] GERMANIUM MONOXIDE (GAS) 88.609

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	30.921	224.288	224.288	−46.191	0.000	−113.063	−46.191	−73.212	12.826
	300.00	30.999	224.480	224.289	−46.134	0.057	−113.478	−46.204	−73.379	12.776
	400.00	33.745	233.830	225.545	−42.877	3.314	−136.409	−46.832	−82.339	10.752
	500.00	35.016	241.513	227.994	−39.432	6.759	−160.188	−47.388	−91.151	9.523
	600.00	35.706	247.963	230.799	−35.893	10.298	−184.671	−47.937	−99.852	8.693
	700.00	36.123	253.501	233.656	−32.300	13.891	−209.750	−48.509	−108.460	8.093
	800.00	36.393	258.344	236.446	−28.673	17.518	−235.348	−49.129	−116.983	7.638
	900.00	36.578	262.641	239.122	−25.024	21.167	−261.401	−49.802	−125.425	7.279
	1000.00	36.710	266.503	241.671	−21.359	24.832	−287.862	−50.553	−133.788	6.988
	1100.00	36.808	270.006	244.090	−17.683	28.508	−314.690	−51.389	−142.072	6.746
	1200.00	36.883	273.212	246.385	−13.998	32.193	−341.853	−52.310	−150.276	6.541
	1300.00	36.941	276.167	248.564	−10.307	35.884	−369.324	−90.128	−155.669	6.255
	1400.00	36.987	278.906	250.634	−6.610	39.581	−397.079	−90.999	−160.678	5.995
	1500.00	37.024	281.459	252.605	−2.910	43.281	−425.099	−91.881	−165.625	5.768
	1600.00	37.055	283.850	254.484	0.794	46.985	−453.366	−92.772	−170.512	5.567
	1700.00	37.080	286.097	256.278	4.501	50.692	−481.864	−93.672	−175.343	5.388
	1800.00	37.101	288.217	257.994	8.210	54.401	−510.581	−94.583	−180.121	5.227
	1900.00	37.119	290.224	259.638	11.921	58.112	−539.504	−95.503	−184.848	5.082
	2000.00	37.134	292.128	261.216	15.634	61.825	−568.622	−96.433	−189.526	4.950

References

Phase	H / S	C_p
GAS	Nb1	e

104.609 GERMANIUM DIOXIDE **GeO2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	50.162	39.706	39.706	−579.902	0.000	−591.740	−579.902	−521.307	91.331
	300.00	50.442	40.017	39.707	−579.809	0.093	−591.814	−579.907	−520.944	90.704
	400.00	60.606	56.111	41.832	−574.190	5.712	−596.635	−579.658	−501.304	65.464
	500.00	65.799	70.246	46.135	−567.846	12.056	−602.969	−578.845	−481.802	50.333
	600.00	69.037	82.548	51.202	−561.094	18.808	−610.623	−577.761	−462.492	40.263
	700.00	71.351	93.372	56.468	−554.069	25.833	−619.430	−576.528	−443.376	33.085
	800.00	73.172	103.023	61.695	−546.840	33.062	−629.258	−575.214	−424.443	27.713
	900.00	74.708	111.732	66.779	−539.444	40.458	−640.003	−573.843	−405.679	23.545
	1000.00	76.066	119.675	71.677	−531.904	47.998	−651.579	−572.449	−387.068	20.218
	1100.00	77.307	126.984	76.377	−524.235	55.667	−663.917	−571.047	−368.598	17.503
	1200.00	78.470	133.761	80.880	−516.446	63.456	−676.958	−569.638	−350.256	15.246
	1300.00	79.576	140.086	85.194	−508.543	71.359	−690.654	−605.036	−329.301	13.231
	1308.00	79.663	140.574	85.531	−507.906	71.996	−691.777	−604.908	−327.605	13.083
			15.994		20.920					
SOL−B	1308.00	76.284	156.568	85.531	−486.986	92.916	−691.777	−583.988	−327.605	13.083
	1389.00	76.864	161.168	89.809	−480.784	99.118	−704.647	−582.949	−311.759	11.724
			9.037		12.552					
LIQ	1389.00	78.709	170.205	89.809	−468.232	111.670	−704.647	−570.397	−311.759	11.724
	1400.00	78.782	170.826	90.443	−467.366	112.536	−706.522	−570.234	−309.711	11.555
	1500.00	79.417	176.283	95.986	−459.456	120.446	−723.881	−568.726	−291.155	10.139
	1600.00	80.043	181.429	101.167	−451.483	128.419	−741.769	−567.182	−272.701	8.903
	1700.00	80.706	186.301	106.033	−443.446	136.456	−760.157	−565.598	−254.344	7.815
	1800.00	81.448	190.934	110.622	−435.339	144.563	−779.021	−563.968	−236.081	6.851
	1900.00	82.312	195.361	114.966	−427.152	152.750	−798.337	−562.283	−217.911	5.991
	2000.00	83.339	199.608	119.093	−418.871	161.031	−818.087	−560.526	−199.831	5.219

References

Phase	H / S	C_p	Remarks
SOL−A	Pa1	Pa1	tetragonal
SOL−B	Pa1	Pa1	hexagonal
LIQ	Pa1	Pa1	

GeP

GERMANIUM PHOSPHIDE

103.584

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	40.789	63.011	63.011	–20.999	0.000	–39.786	–20.999	–18.272	3.201
	300.00	40.882	63.264	63.012	–20.923	0.076	–39.903	–21.011	–18.255	3.179
	400.00	44.554	75.580	64.666	–16.633	4.366	–46.865	–22.371	–17.058	2.228
	500.00	46.861	85.784	67.899	–12.056	8.943	–54.948	–22.898	–15.665	1.636
	600.00	48.630	94.490	71.623	–7.279	13.720	–63.973	–23.262	–14.181	1.235
	700.00	50.145	102.102	75.444	–2.339	18.660	–73.810	–23.492	–12.648	0.944
	800.00	51.525	108.889	79.208	2.746	23.745	–84.366	–23.618	–11.089	0.724
	900.00	52.826	115.034	82.853	7.964	28.963	–95.567	–23.653	–9.520	0.553
	1000.00	54.078	120.665	86.356	13.309	34.308	–107.355	–23.624	–7.951	0.415
	1100.00	55.299	125.876	89.715	18.778	39.777	–119.686	–23.545	–6.387	0.303
	1200.00	56.497	130.739	92.933	24.368	45.367	–132.519	–86.990	–3.743	0.163
	1300.00	57.681	135.308	96.019	30.077	51.076	–145.824	–122.857	5.887	–0.237
	1400.00	58.853	139.626	98.981	35.904	56.903	–159.572	–121.654	15.746	–0.587
	1500.00	60.017	143.726	101.828	41.848	62.847	–173.742	–120.339	25.515	–0.889
	1600.00	61.175	147.637	104.570	47.907	68.906	–188.311	–118.911	35.192	–1.149
	1700.00	62.328	151.380	107.214	54.083	75.082	–203.263	–117.371	44.777	–1.376

References

Phase	H / S	C_p
SOL	Nb1	e

GeS

GERMANIUM MONOSULFIDE

104.676

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	47.798	65.982	65.982	–76.149	0.000	–95.821	–76.149	–76.995	13.489
	300.00	47.836	66.277	65.983	–76.061	0.088	–95.944	–76.146	–77.001	13.407
	400.00	49.848	80.315	67.883	–71.176	4.973	–103.302	–78.242	–77.217	10.083
	500.00	51.861	91.654	71.538	–66.091	10.058	–111.918	–79.531	–76.831	8.026
	600.00	53.873	101.287	75.713	–60.804	15.345	–121.577	–80.329	–76.205	6.634
	700.00	55.886	109.743	79.982	–55.316	20.833	–132.136	–80.687	–75.486	5.633
	800.00	57.898	117.337	84.184	–49.627	26.522	–143.497	–80.936	–74.726	4.879
	900.00	59.911	124.272	88.259	–43.737	32.412	–155.582	–133.872	–72.786	4.224
	938.00	60.675	126.766	89.768	–41.445	34.704	–160.352	–133.289	–70.219	3.910
			24.979		23.430					
LIQ	938.00	60.668	151.744	89.768	–18.015	58.134	–160.352	–109.859	–70.219	3.910
	1000.00	60.668	155.628	93.733	–14.254	61.895	–169.882	–108.909	–67.630	3.533
	1100.00	60.668	161.410	99.626	–8.187	67.962	–185.738	–107.442	–63.574	3.019
	1110.36	60.668	161.979	100.206	–7.559	68.590	–187.413	–107.295	–63.161	2.971

References

Phase	H / S	C_p	Remarks
SOL	Mi1	Mi1	
LIQ	Mi1	Mi1	Mi1 BPT= 1110.36, L= 126.5 kJ

104.676

GERMANIUM MONOSULFIDE (GAS) **GeS**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	33.660	235.501	235.501	97.069	0.000	26.854	97.069	45.680	−8.003
	300.00	33.700	235.710	235.502	97.131	0.062	26.418	97.046	45.362	−7.898
	400.00	35.125	245.628	236.845	100.582	3.513	2.331	93.517	28.417	−3.711
	500.00	35.807	253.547	239.420	104.133	7.064	−22.641	90.693	12.446	−1.300
	600.00	36.196	260.113	242.337	107.734	10.665	−48.333	88.210	−2.962	0.258
	700.00	36.448	265.713	245.287	111.367	14.298	−74.632	85.996	−17.981	1.342
	800.00	36.626	270.592	248.151	115.021	17.952	−101.452	83.712	−32.681	2.134
	900.00	36.761	274.914	250.889	118.691	21.622	−128.731	28.555	−45.936	2.666
	1000.00	36.869	278.793	253.489	122.373	25.304	−156.420	27.718	−54.168	2.829
	1100.00	36.961	282.311	255.952	126.064	28.995	−184.478	26.810	−62.314	2.959
	1200.00	37.040	285.531	258.284	129.764	32.695	−212.872	25.830	−70.373	3.063
	1300.00	37.111	288.498	260.496	133.472	36.403	−241.576	−12.034	−75.617	3.038
	1400.00	37.176	291.251	262.596	137.186	40.117	−270.565	−12.940	−80.474	3.003
	1500.00	37.237	293.818	264.592	140.907	43.838	−299.820	−13.845	−85.267	2.969
	1600.00	37.294	296.223	266.495	144.634	47.565	−329.323	−14.748	−89.999	2.938
	1700.00	37.348	298.485	268.311	148.366	51.297	−359.060	−15.650	−94.674	2.909
	1800.00	37.401	300.622	270.047	152.103	55.034	−389.016	−16.550	−99.297	2.882
	1900.00	37.452	302.645	271.710	155.846	58.777	−419.180	−17.450	−103.869	2.856
	2000.00	37.501	304.568	273.305	159.594	62.525	−449.542	−18.348	−108.394	2.831

References

Phase	H / S	C_p
GAS	Mi1	Mi1

GeS2 GERMANIUM DISULFIDE 136.742

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	65.698	87.446	87.446	−156.900	0.000	−182.972	−156.900	−154.588	27.083
	300.00	65.756	87.852	87.447	−156.778	0.122	−183.134	−156.906	−154.574	26.914
	400.00	68.860	107.194	90.063	−150.048	6.852	−192.925	−161.737	−153.562	20.053
	500.00	71.965	122.893	95.106	−143.006	13.894	−204.453	−164.972	−151.185	15.794
	600.00	75.069	136.288	100.880	−135.655	21.245	−217.428	−167.281	−148.190	12.901
	700.00	78.174	148.094	106.797	−127.992	28.908	−231.658	−168.775	−144.884	10.811
	800.00	81.278	158.735	112.635	−120.020	36.880	−247.008	−170.100	−141.381	9.231
	900.00	84.383	168.487	118.306	−111.737	45.163	−263.375	−276.850	−135.412	7.859
	1000.00	87.487	177.539	123.782	−103.143	53.757	−280.682	−274.611	−119.814	6.258
	1100.00	90.592	186.023	129.058	−94.239	62.661	−298.864	−272.149	−104.452	4.960
	1113.00	90.996	187.089	129.730	−93.059	63.841	−301.290	−271.812	−102.472	4.809
			37.592		41.840					
LIQ	1113.00	93.722	224.682	129.730	−51.219	105.681	−301.290	−271.812	−102.472	4.809
	1200.00	93.722	231.735	136.873	−43.065	113.835	−321.148	−227.503	−92.600	4.031

References

Phase	H / S	C_p
SOL	Mi1	Mi1
LIQ	Mi1	e

GeSe GERMANIUM MONOSELENIDE 151.570

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	49.994	78.241	78.241	−69.036	0.000	−92.363	−69.036	−70.496	12.351
	300.00	50.024	78.550	78.242	−68.943	0.093	−92.509	−69.034	−70.505	12.276
	400.00	51.664	93.166	80.223	−63.859	5.177	−101.125	−69.016	−71.003	9.272
	500.00	53.304	104.870	84.020	−58.611	10.425	−111.046	−75.050	−71.402	7.459
	600.00	54.944	114.734	88.338	−53.198	15.838	−122.039	−75.661	−70.613	6.147
	700.00	56.584	123.327	92.735	−47.622	21.414	−133.951	−76.136	−69.733	5.204
	800.00	58.225	130.990	97.046	−41.881	27.155	−146.673	−76.488	−68.793	4.492
	900.00	59.865	137.942	101.210	−35.977	33.059	−160.125	−76.718	−67.816	3.936
	948.00	60.652	141.073	103.150	−33.085	35.951	−166.822	−76.792	−67.339	3.710
			26.040		24.686					
LIQ	948.00	63.597	167.113	103.150	−8.399	60.637	−166.822	−52.106	−67.339	3.710
	1000.00	63.597	170.509	106.565	−5.091	63.945	−175.601	−52.031	−68.176	3.561
	1100.00	63.597	176.571	112.658	1.268	70.304	−192.960	−105.255	−64.842	3.079
	1124.35	63.597	177.963	114.057	2.817	71.853	−197.276	−104.894	−63.951	2.971

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	Mi1		
LIQ	Mi1	Mi1	Mi1	BPT= 1124.35, L= 132.8 kJ

151.570 GERMANIUM MONOSELENIDE (GAS) **GeSe[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	35.060	247.802	247.802	105.437	0.000	31.555	105.437	53.423	−9.359
	300.00	35.084	248.019	247.803	105.502	0.065	31.096	105.412	53.100	−9.246
	400.00	35.955	258.249	249.192	109.060	3.623	5.760	103.903	35.883	−4.686
	500.00	36.367	266.321	251.839	112.678	7.241	−20.482	96.239	19.161	−2.002
	600.00	36.599	272.974	254.823	116.328	10.891	−47.457	93.865	3.968	−0.345
	700.00	36.745	278.628	257.830	119.995	14.558	−75.044	91.481	−10.826	0.808
	800.00	36.846	283.541	260.744	123.675	18.238	−103.158	89.068	−25.278	1.650
	900.00	36.920	287.886	263.523	127.364	21.927	−131.734	86.622	−39.424	2.288
	1000.00	36.978	291.779	266.157	131.059	25.622	−160.720	84.119	−53.296	2.784
	1100.00	37.025	295.305	268.649	134.759	29.322	−190.077	28.235	−61.959	2.942
	1200.00	37.065	298.529	271.007	138.463	33.026	−219.771	27.041	−70.106	3.052
	1300.00	37.100	301.497	273.239	142.172	36.735	−249.774	−11.025	−75.421	3.030
	1400.00	37.131	304.248	275.357	145.883	40.446	−280.063	−12.119	−80.334	2.997
	1500.00	37.159	306.810	277.370	149.598	44.161	−310.618	−13.197	−85.168	2.966
	1600.00	37.186	309.209	279.286	153.315	47.878	−341.420	−14.260	−89.932	2.936
	1700.00	37.210	311.465	281.113	157.035	51.598	−372.455	−15.308	−94.629	2.908
	1800.00	37.234	313.592	282.859	160.757	55.320	−403.709	−16.341	−99.265	2.881
	1900.00	37.256	315.606	284.530	164.482	59.045	−435.169	−17.358	−103.844	2.855
	2000.00	37.277	317.517	286.132	168.208	62.771	−466.826	−18.361	−108.370	2.830

References

Phase	H / S	C_p
GAS	Mi1	Mi1

230.530 GERMANIUM DISELENIDE **GeSe2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	71.156	112.550	112.550	−112.968	0.000	−146.525	−112.968	−112.057	19.632
	300.00	71.207	112.990	112.551	−112.836	0.132	−146.733	−112.974	−112.052	19.510
	400.00	73.981	133.855	115.377	−105.577	7.391	−159.119	−113.449	−111.682	14.584
	500.00	76.755	150.661	120.805	−98.040	14.928	−173.371	−126.004	−110.990	11.595
	600.00	79.529	164.901	126.997	−90.226	22.742	−189.166	−127.728	−107.821	9.387
	700.00	82.303	177.369	133.320	−82.134	30.834	−206.292	−129.202	−104.383	7.789
	800.00	85.077	188.540	139.536	−73.765	39.203	−224.597	−130.441	−100.750	6.578
	900.00	87.851	198.721	145.555	−65.119	47.849	−243.967	−131.443	−96.976	5.628
	1000.00	90.625	208.120	151.347	−56.195	56.773	−264.315	−132.233	−93.102	4.863
	1013.00	90.986	209.293	152.083	−55.014	57.954	−267.028	−241.442	−92.003	4.744

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	Mi1	Mi1	MPT= 1013.

GeTe — GERMANIUM MONOTELLURIDE — 200.210

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	51.858	89.956	89.956	−48.534	0.000	−75.354	−48.534	−51.328	8.993
	300.00	51.882	90.277	89.957	−48.438	0.096	−75.521	−48.529	−51.346	8.940
	400.00	53.137	105.374	92.007	−43.187	5.347	−85.337	−48.362	−52.315	6.832
	500.00	54.392	117.366	95.920	−37.811	10.723	−96.494	−48.364	−53.306	5.569
	600.00	55.647	127.394	100.352	−32.309	16.225	−108.745	−48.498	−54.284	4.726
	700.00	56.902	136.066	104.848	−26.681	21.853	−121.928	−48.755	−55.230	4.121
	800.00	58.158	143.746	109.239	−20.928	27.606	−135.925	−66.772	−54.250	3.542
	900.00	59.413	150.669	113.464	−15.050	33.484	−150.652	−67.278	−52.653	3.056
	997.00	60.630	156.811	117.387	−9.228	39.306	−165.569	−67.711	−51.054	2.675

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	Mi1	Mi1	MPT= 997.

GeU — GERMANIUM URANIUM — 310.639

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	51.412	90.374	90.374	−61.505	0.000	−88.450	−61.505	−64.187	11.245
	300.00	51.495	90.693	90.375	−61.410	0.095	−88.618	−61.504	−64.204	11.179
	400.00	54.930	106.017	92.441	−56.075	5.430	−98.482	−61.437	−65.113	8.503
	500.00	57.338	118.543	96.447	−50.457	11.048	−109.728	−61.372	−66.040	6.899
	600.00	59.341	129.178	101.038	−44.621	16.884	−122.128	−61.379	−66.974	5.831
	700.00	61.154	138.464	105.735	−38.595	22.910	−135.519	−61.525	−67.898	5.067
	800.00	62.865	146.742	110.352	−32.393	29.112	−149.787	−61.887	−68.787	4.491
	900.00	64.517	154.243	114.819	−26.024	35.481	−164.842	−62.527	−69.614	4.040
	1000.00	66.132	161.124	119.110	−19.491	42.014	−180.615	−65.930	−70.187	3.666
	1100.00	67.724	167.502	123.223	−12.798	48.707	−197.050	−70.803	−70.365	3.341
	1200.00	69.298	173.462	127.164	−5.947	55.558	−214.101	−70.612	−70.333	3.062
	1300.00	70.862	179.071	130.943	1.061	62.566	−231.731	−107.150	−67.590	2.716
	1400.00	72.417	184.379	134.572	8.225	69.730	−249.905	−106.576	−64.567	2.409

References

Phase	H / S	C_p
SOL	Ra1	Ra1,e

383.249

2–GERMANIUM URANIUM

Ge2U

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	75.846	130.541	130.541	–87.446	0.000	–126.367	–87.446	–92.835	16.264
	300.00	75.934	131.010	130.542	–87.306	0.140	–126.609	–87.443	–92.868	16.170
	400.00	79.718	153.412	133.571	–79.510	7.936	–140.874	–87.314	–94.697	12.366
	500.00	82.496	171.510	139.406	–71.394	16.052	–157.149	–87.224	–96.555	10.087
	600.00	84.878	186.765	146.060	–63.023	24.423	–175.082	–87.205	–98.424	8.569
	700.00	87.074	200.016	152.842	–54.425	33.021	–194.435	–87.315	–100.288	7.484
	800.00	89.170	211.780	159.487	–45.612	41.834	–215.036	–87.644	–102.122	6.668
	900.00	91.209	222.401	165.897	–36.592	50.854	–236.753	–88.254	–103.898	6.030
	1000.00	93.211	232.115	172.040	–27.371	60.075	–259.486	–91.653	–105.423	5.507
	1100.00	95.190	241.092	177.915	–17.951	69.495	–283.152	–96.556	–106.551	5.060
	1200.00	97.153	249.459	183.532	–8.334	79.112	–307.684	–96.430	–107.464	4.678
	1300.00	99.105	257.312	188.908	1.479	88.925	–333.027	–169.881	–102.930	4.136
	1400.00	101.048	264.728	194.061	11.487	98.933	–359.132	–169.224	–97.803	3.649

References

Phase	H / S	C_p
SOL	Ra1	Ra1,e

455.859

3–GERMANIUM URANIUM

Ge3U

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	100.321	170.707	170.707	–106.692	0.000	–157.588	–106.692	–114.788	20.110
	300.00	100.416	171.328	170.709	–106.506	0.186	–157.905	–106.687	–114.838	19.995
	400.00	104.548	200.820	174.702	–96.245	10.447	–176.573	–106.491	–117.588	15.355
	500.00	107.696	224.497	182.370	–85.628	21.064	–197.877	–106.372	–120.377	12.576
	600.00	110.458	244.381	191.091	–74.718	31.974	–221.347	–106.323	–123.184	10.724
	700.00	113.036	261.603	199.961	–63.543	43.149	–246.665	–106.393	–125.991	9.402
	800.00	115.518	276.860	208.638	–52.114	54.578	–273.602	–106.685	–128.774	8.408
	900.00	117.942	290.606	216.994	–40.441	66.251	–301.987	–107.260	–131.503	7.632
	1000.00	120.332	303.157	224.992	–28.527	78.165	–331.684	–110.651	–133.985	6.999
	1100.00	122.698	314.737	232.630	–16.375	90.317	–362.586	–115.580	–136.068	6.461
	1200.00	125.049	325.514	239.927	–3.988	102.704	–394.604	–115.515	–137.933	6.004
	1300.00	127.389	335.615	246.903	8.634	115.326	–427.666	–225.875	–131.613	5.288
	1400.00	129.721	345.141	253.583	21.490	128.182	–461.708	–225.132	–124.388	4.641

References

Phase	H / S	C_p
SOL	Ra1	Ra1,e

Ge3U5 — 3–GERMANIUM 5–URANIUM — 1407.974

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	208.202	374.886	374.886	–235.141	0.000	–346.913	–235.141	–244.135	42.771
	300.00	208.603	376.176	374.890	–234.755	0.386	–347.608	–235.141	–244.191	42.517
	400.00	225.097	438.644	383.296	–213.002	22.139	–388.459	–234.926	–247.231	32.285
	500.00	236.413	490.144	399.665	–189.901	45.240	–434.974	–234.652	–250.342	26.153
	600.00	245.690	534.088	418.495	–165.785	69.356	–486.238	–234.734	–253.482	22.068
	700.00	254.005	572.594	437.814	–140.795	94.346	–541.611	–235.526	–256.556	19.144
	800.00	261.807	607.025	456.850	–115.001	120.140	–600.621	–237.395	–259.448	16.940
	900.00	269.311	638.297	475.300	–88.443	146.698	–662.911	–240.642	–262.025	15.208
	1000.00	276.629	667.052	493.056	–61.145	173.996	–728.197	–257.658	–263.331	13.755
	1100.00	283.827	693.756	510.102	–33.121	202.020	–796.253	–281.949	–262.661	12.473
	1200.00	290.942	718.758	526.459	–4.382	230.759	–866.891	–280.845	–260.952	11.359
	1300.00	297.999	742.324	542.166	25.065	260.206	–939.957	–389.693	–251.164	10.092
	1400.00	305.014	764.665	557.268	55.216	290.357	–1015.316	–386.968	–240.606	8.977

References

Phase	H / S	C_p
SOL	Ra1	Ra1,e

Ge5U3 — 5–GERMANIUM 3–URANIUM — 1077.137

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	203.146	351.874	351.874	–239.743	0.000	–344.654	–239.743	–253.328	44.382
	300.00	203.406	353.132	351.878	–239.367	0.376	–345.306	–239.737	–253.412	44.123
	400.00	214.407	413.271	360.003	–218.436	21.307	–383.744	–239.406	–258.021	33.694
	500.00	222.371	462.003	375.682	–196.582	43.161	–427.584	–239.158	–262.707	27.445
	600.00	229.140	503.156	393.585	–174.000	65.743	–475.894	–239.123	–267.424	23.281
	700.00	235.344	538.949	411.849	–150.773	88.970	–528.037	–239.484	–272.121	20.306
	800.00	241.248	570.763	429.761	–126.941	112.802	–583.552	–240.500	–276.723	18.068
	900.00	246.976	599.510	447.050	–102.529	137.214	–642.088	–242.355	–281.149	16.317
	1000.00	252.596	625.823	463.630	–77.550	162.193	–703.373	–252.553	–284.819	14.877
	1100.00	258.145	650.159	479.494	–52.012	187.731	–767.187	–267.228	–287.299	13.643
	1200.00	263.646	672.856	494.672	–25.922	213.821	–833.350	–266.779	–289.142	12.586
	1300.00	269.113	694.175	509.207	0.716	240.459	–901.712	–450.216	–277.377	11.145
	1400.00	274.555	714.318	523.145	27.899	267.642	–972.146	–448.325	–264.149	9.856

References

Phase	H / S	C_p
SOL	Ra1	Ra1,e

1.008 HYDROGEN (GAS) **H[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	20.786	114.716	114.716	217.999	0.000	183.796	217.999	203.278	−35.613
	300.00	20.786	114.845	114.716	218.037	0.038	183.584	218.011	203.186	−35.378
	400.00	20.786	120.824	115.532	220.116	2.117	171.786	218.636	198.150	−25.876
	500.00	20.786	125.463	117.071	222.195	4.196	159.463	219.254	192.957	−20.158
	600.00	20.786	129.252	118.795	224.273	6.274	146.722	219.868	187.640	−16.335
	700.00	20.786	132.457	120.524	226.352	8.353	133.632	220.477	182.220	−13.597
	800.00	20.786	135.232	122.193	228.430	10.431	120.245	221.080	176.713	−11.538
	900.00	20.786	137.680	123.780	230.509	12.510	106.597	221.671	171.132	−9.932
	1000.00	20.786	139.870	125.282	232.588	14.589	92.717	222.248	165.485	−8.644
	1100.00	20.786	141.851	126.699	234.666	16.667	78.630	222.807	159.782	−7.587
	1200.00	20.786	143.660	128.039	236.745	18.746	64.353	223.346	154.029	−6.705
	1300.00	20.786	145.324	129.305	238.823	20.824	49.902	223.865	148.231	−5.956
	1400.00	20.786	146.864	130.505	240.902	22.903	35.292	224.361	142.394	−5.313
	1500.00	20.786	148.298	131.644	242.981	24.982	20.533	224.836	136.523	−4.754
	1600.00	20.786	149.640	132.727	245.059	27.060	5.635	225.289	130.620	−4.264
	1700.00	20.786	150.900	133.759	247.138	29.139	−9.392	225.721	124.690	−3.831
	1800.00	20.786	152.088	134.745	249.216	31.217	−24.542	226.132	118.735	−3.446
	1900.00	20.786	153.212	135.688	251.295	33.296	−39.808	226.524	112.758	−3.100
	2000.00	20.786	154.278	136.591	253.374	35.375	−55.183	226.898	106.760	−2.788
	2100.00	20.786	155.292	137.457	255.452	37.453	−70.662	227.254	100.745	−2.506
	2200.00	20.786	156.259	138.290	257.531	39.532	−86.239	227.593	94.712	−2.249
	2300.00	20.786	157.183	139.092	259.609	41.610	−101.912	227.916	88.665	−2.014
	2400.00	20.786	158.068	139.864	261.688	43.689	−117.675	228.224	82.604	−1.798
	2500.00	20.786	158.916	140.609	263.767	45.768	−133.524	228.518	76.531	−1.599
	2600.00	20.786	159.732	141.329	265.845	47.846	−149.457	228.797	70.445	−1.415
	2700.00	20.786	160.516	142.025	267.924	49.925	−165.470	229.064	64.350	−1.245
	2800.00	20.786	161.272	142.699	270.002	52.003	−181.559	229.318	58.245	−1.087
	2900.00	20.786	162.001	143.352	272.081	54.082	−197.723	229.560	52.131	−0.939
	3000.00	20.786	162.706	143.986	274.160	56.161	−213.959	229.790	46.008	−0.801
	3100.00	20.786	163.388	144.601	276.238	58.239	−230.264	230.008	39.879	−0.672
	3200.00	20.786	164.048	145.198	278.317	60.318	−246.635	230.216	33.742	−0.551
	3300.00	20.786	164.687	145.779	280.395	62.396	−263.072	230.413	27.599	−0.437
	3400.00	20.786	165.308	146.345	282.474	64.475	−279.572	230.599	21.451	−0.330
	3500.00	20.786	165.910	146.895	284.553	66.554	−296.133	230.775	15.297	−0.228
	3600.00	20.786	166.496	147.431	286.631	68.632	−312.754	230.941	9.138	−0.133
	3700.00	20.786	167.065	147.954	288.710	70.711	−329.432	231.098	2.974	−0.042
	3800.00	20.786	167.620	148.465	290.788	72.789	−346.166	231.244	−3.193	0.044
	3900.00	20.786	168.160	148.963	292.867	74.868	−362.955	231.381	−9.364	0.125
	4000.00	20.786	168.686	149.449	294.946	76.947	−379.798	231.509	−15.539	0.203
	4100.00	20.786	169.199	149.925	297.024	79.025	−396.692	231.627	−21.717	0.277
	4200.00	20.786	169.700	150.390	299.103	81.104	−413.637	231.736	−27.897	0.347
	4300.00	20.786	170.189	150.844	301.181	83.182	−430.632	231.836	−34.080	0.414
	4400.00	20.786	170.667	151.289	303.260	85.261	−447.675	231.927	−40.265	0.478
	4500.00	20.786	171.134	151.725	305.339	87.340	−464.765	232.009	−46.452	0.539
	4600.00	20.786	171.591	152.152	307.417	89.418	−481.901	232.082	−52.641	0.598
	4700.00	20.786	172.038	152.571	309.496	91.497	−499.083	232.147	−58.831	0.654
	4800.00	20.786	172.476	152.981	311.574	93.575	−516.308	232.204	−65.023	0.708
	4900.00	20.786	172.904	153.383	313.653	95.654	−533.578	232.253	−71.216	0.759
	5000.00	20.786	173.324	153.778	315.732	97.733	−550.889	232.294	−77.409	0.809

References

Phase	H / S	C_p
GAS	Ja2	Ja2

H2[g] HYDROGEN (GAS) 2.016

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	28.836	130.680	130.680	0.000	0.000	−38.962	0.000	0.000	0.000
	300.00	28.849	130.858	130.681	0.053	0.053	−39.204	0.000	0.000	0.000
	400.00	29.182	139.216	131.818	2.959	2.959	−52.727	0.000	0.000	0.000
	500.00	29.260	145.737	133.974	5.882	5.882	−66.987	0.000	0.000	0.000
	600.00	29.326	151.077	136.393	8.811	8.811	−81.836	0.000	0.000	0.000
	700.00	29.442	155.606	138.822	11.749	11.749	−97.175	0.000	0.000	0.000
	800.00	29.625	159.549	141.172	14.702	14.702	−112.937	0.000	0.000	0.000
	900.00	29.880	163.052	143.412	17.676	17.676	−129.070	0.000	0.000	0.000
	1000.00	30.205	166.216	145.536	20.680	20.680	−145.536	0.000	0.000	0.000
	1100.00	30.579	169.112	147.550	23.719	23.719	−162.305	0.000	0.000	0.000
	1200.00	30.992	171.790	149.460	26.797	26.797	−179.352	0.000	0.000	0.000
	1300.00	31.424	174.288	151.275	29.918	29.918	−196.657	0.000	0.000	0.000
	1400.00	31.863	176.633	153.003	33.082	33.082	−214.204	0.000	0.000	0.000
	1500.00	32.298	178.846	154.653	36.290	36.290	−231.979	0.000	0.000	0.000
	1600.00	32.725	180.944	156.231	39.541	39.541	−249.970	0.000	0.000	0.000
	1700.00	33.138	182.941	157.744	42.835	42.835	−268.165	0.000	0.000	0.000
	1800.00	33.536	184.846	159.197	46.168	46.168	−286.555	0.000	0.000	0.000
	1900.00	33.916	186.670	160.595	49.541	49.541	−305.131	0.000	0.000	0.000
	2000.00	34.279	188.419	161.943	52.951	52.951	−323.886	0.000	0.000	0.000
	2100.00	34.625	190.100	163.244	56.396	56.396	−342.813	0.000	0.000	0.000
	2200.00	34.953	191.718	164.502	59.875	59.875	−361.904	0.000	0.000	0.000
	2300.00	35.264	193.279	165.719	63.386	63.386	−381.154	0.000	0.000	0.000
	2400.00	35.560	194.786	166.899	66.928	66.928	−400.558	0.000	0.000	0.000
	2500.00	35.842	196.243	168.044	70.498	70.498	−420.110	0.000	0.000	0.000
	2600.00	36.111	197.654	169.156	74.096	74.096	−439.805	0.000	0.000	0.000
	2700.00	36.369	199.022	170.237	77.720	77.720	−459.639	0.000	0.000	0.000
	2800.00	36.616	200.349	171.289	81.369	81.369	−479.608	0.000	0.000	0.000
	2900.00	36.856	201.638	172.313	85.043	85.043	−499.708	0.000	0.000	0.000
	3000.00	37.089	202.891	173.311	88.740	88.740	−519.934	0.000	0.000	0.000
	3100.00	37.311	204.111	174.285	92.460	92.460	−540.285	0.000	0.000	0.000
	3200.00	37.529	205.299	175.236	96.202	96.202	−560.756	0.000	0.000	0.000
	3300.00	37.740	206.457	176.165	99.966	99.966	−581.344	0.000	0.000	0.000
	3400.00	37.946	207.587	177.072	103.750	103.750	−602.046	0.000	0.000	0.000
	3500.00	38.149	208.690	177.960	107.555	107.555	−622.860	0.000	0.000	0.000
	3600.00	38.348	209.767	178.829	111.380	111.380	−643.783	0.000	0.000	0.000
	3700.00	38.544	210.821	179.679	115.224	115.224	−664.813	0.000	0.000	0.000
	3800.00	38.737	211.851	180.512	119.088	119.088	−685.947	0.000	0.000	0.000
	3900.00	38.928	212.860	181.329	122.971	122.971	−707.182	0.000	0.000	0.000
	4000.00	39.116	213.848	182.129	126.874	126.874	−728.518	0.000	0.000	0.000
	4100.00	39.302	214.816	182.915	130.795	130.795	−749.951	0.000	0.000	0.000
	4200.00	39.485	215.765	183.686	134.734	134.734	−771.480	0.000	0.000	0.000
	4300.00	39.665	216.697	184.443	138.691	138.691	−793.104	0.000	0.000	0.000
	4400.00	39.843	217.610	185.186	142.667	142.667	−814.819	0.000	0.000	0.000
	4500.00	40.017	218.508	185.917	146.660	146.660	−836.625	0.000	0.000	0.000
	4600.00	40.188	219.389	186.635	150.670	150.670	−858.520	0.000	0.000	0.000
	4700.00	40.355	220.255	187.341	154.697	154.697	−880.503	0.000	0.000	0.000
	4800.00	40.518	221.107	188.036	158.741	158.741	−902.571	0.000	0.000	0.000
	4900.00	40.676	221.944	188.719	162.801	162.801	−924.723	0.000	0.000	0.000
	5000.00	40.828	222.767	189.392	166.876	166.876	−946.959	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Ja2	Ja2

43.818

METABORIC ACID **HBO2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	54.557	48.953	48.953	−802.784	0.000	−817.379	−802.784	−734.995	128.768
	300.00	54.716	49.291	48.954	−802.683	0.101	−817.470	−802.785	−734.575	127.901
	400.00	61.540	66.036	51.191	−796.846	5.938	−823.260	−802.737	−711.841	92.957
	500.00	66.551	80.326	55.623	−790.433	12.351	−830.596	−802.574	−689.134	71.993
	509.00	66.958	81.517	56.071	−789.832	12.952	−831.324	−802.555	−687.092	70.511

References

Phase	H / S	C_p	Remarks
SOL	Ja1	Ja1	Ja1 MPT= 509.

43.818

METABORIC ACID (GAS) **HBO2**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	42.205	239.740	239.740	−560.656	0.000	−632.134	−560.656	−549.750	96.314
	300.00	42.338	240.001	239.741	−560.578	0.078	−632.578	−560.680	−549.683	95.708
	400.00	48.004	253.015	241.477	−556.041	4.615	−657.247	−561.931	−545.827	71.278
	500.00	52.161	264.189	244.928	−551.025	9.631	−683.120	−563.167	−541.658	56.587
	600.00	55.723	274.020	248.973	−545.628	15.028	−710.040	−564.374	−537.242	46.771
	700.00	59.005	282.859	253.193	−539.890	20.766	−737.891	−565.515	−532.629	39.745
	800.00	62.137	290.944	257.413	−533.832	26.824	−766.587	−566.553	−527.858	34.466
	900.00	64.722	298.418	261.559	−527.484	33.172	−796.059	−567.480	−522.965	30.352
	1000.00	66.734	305.345	265.596	−520.907	39.749	−826.252	−568.329	−517.973	27.056
	1100.00	68.359	311.784	269.506	−514.150	46.506	−857.112	−569.131	−512.898	24.355
	1200.00	69.721	317.792	273.282	−507.244	53.412	−888.594	−569.902	−507.751	22.102
	1300.00	70.898	323.420	276.925	−500.212	60.444	−920.658	−570.654	−502.542	20.192
	1400.00	71.941	328.713	280.437	−493.069	67.587	−953.267	−571.396	−497.274	18.554
	1500.00	72.885	333.709	283.823	−485.827	74.829	−986.391	−572.134	−491.954	17.131
	1600.00	73.752	338.441	287.090	−478.494	82.162	−1020.000	−572.870	−486.585	15.885
	1700.00	74.562	342.937	290.244	−471.078	89.578	−1054.071	−573.609	−481.169	14.785
	1800.00	75.326	347.221	293.292	−463.583	97.073	−1088.581	−574.351	−475.710	13.805
	1900.00	76.053	351.313	296.238	−456.014	104.642	−1123.509	−575.100	−470.210	12.927
	2000.00	76.751	355.232	299.091	−448.374	112.282	−1158.838	−575.854	−464.670	12.136

References

Phase	H / S	C_p
GAS	Ja1	Ja1

H3BO3 BORIC ACID 61.833

Phase	T [K]	C_p J/(K mol)	S J/(K mol)	−(G−H298)/T J/(K mol)	H kJ/mol	H−H298 kJ/mol	G kJ/mol	ΔH_f kJ/mol	ΔG_f kJ/mol	log K_f [−]
SOL	298.15	81.375	88.743	88.743	−1093.990	0.000	−1120.449	−1093.990	−968.520	169.681
	300.00	81.717	89.247	88.744	−1093.839	0.151	−1120.613	−1094.022	−967.742	168.499
	400.00	100.208	115.288	92.170	−1084.743	9.247	−1130.858	−1095.106	−925.450	120.851
	444.10	108.362	126.187	95.009	−1080.144	13.846	−1136.184	−1095.170	−906.740	106.650

References

Phase	H / S	C_p	Remarks
SOL	Ja1,Nb1	Ja1	Ja1 NDPT= 330., MPT= 444.1

H3BO3[g] BORIC ACID (GAS) 61.833

Phase	T [K]	C_p J/(K mol)	S J/(K mol)	−(G−H298)/T J/(K mol)	H kJ/mol	H−H298 kJ/mol	G kJ/mol	ΔH_f kJ/mol	ΔG_f kJ/mol	log K_f [−]
GAS	298.15	65.347	295.245	295.245	−992.277	0.000	−1080.304	−992.277	−928.376	162.648
	300.00	65.551	295.649	295.246	−992.156	0.121	−1080.851	−992.339	−927.979	161.576
	400.00	76.850	316.070	297.953	−985.030	7.247	−1111.458	−995.393	−906.050	118.318
	500.00	86.383	334.283	303.430	−976.851	15.426	−1143.992	−997.916	−883.412	92.289
	600.00	94.017	350.732	309.965	−967.817	24.460	−1178.256	−999.996	−860.310	74.897
	700.00	100.263	365.709	316.875	−958.093	34.184	−1214.090	−1001.716	−836.888	62.449
	800.00	105.495	379.448	323.850	−947.798	44.479	−1251.357	−1003.139	−813.241	53.099
	900.00	109.955	392.138	330.741	−937.020	55.257	−1289.944	−1004.313	−789.431	45.817
	1000.00	113.801	403.927	337.477	−925.828	66.449	−1329.754	−1005.281	−765.501	39.986
	1100.00	117.140	414.934	344.024	−914.277	78.000	−1370.704	−1006.082	−741.483	35.210
	1200.00	120.051	425.254	350.368	−902.414	89.863	−1412.718	−1006.749	−717.398	31.228
	1300.00	122.595	434.966	356.505	−890.279	101.998	−1455.734	−1007.311	−693.262	27.856
	1400.00	124.822	444.134	362.440	−877.905	114.372	−1499.693	−1007.794	−669.086	24.964
	1500.00	126.772	452.814	368.178	−865.324	126.953	−1544.545	−1008.220	−644.878	22.457
	1600.00	128.483	461.052	373.728	−852.559	139.718	−1590.241	−1008.609	−620.642	20.262
	1700.00	129.987	468.887	379.097	−839.634	152.643	−1636.742	−1008.978	−596.383	18.325
	1800.00	131.316	476.355	384.294	−826.567	165.710	−1684.007	−1009.341	−572.102	16.602
	1900.00	132.498	483.487	389.329	−813.376	178.901	−1732.001	−1009.709	−547.801	15.060
	2000.00	133.562	490.311	394.208	−800.072	192.205	−1780.694	−1010.091	−523.480	13.672

References

Phase	H / S	C_p
GAS	Ja1	Ja1

80.912

HYDROGEN BROMIDE (GAS) **HBr**[g]

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	29.144	198.695	198.695	−36.380	0.000	−95.621	−36.380	−53.449	9.364
	300.00	29.147	198.875	198.695	−36.326	0.054	−95.989	−36.423	−53.555	9.325
	400.00	29.196	207.267	199.839	−33.409	2.971	−116.316	−52.200	−56.044	7.319
	500.00	29.442	213.803	202.002	−30.479	5.901	−137.381	−52.577	−56.961	5.951
	600.00	29.900	219.209	204.432	−27.513	8.867	−159.039	−52.935	−57.804	5.032
	700.00	30.469	223.860	206.882	−24.496	11.884	−181.198	−53.254	−58.589	4.372
	800.00	31.083	227.969	209.266	−21.418	14.962	−203.793	−53.527	−59.332	3.874
	900.00	31.699	231.665	211.553	−18.279	18.101	−226.778	−53.754	−60.044	3.485
	1000.00	32.297	235.036	213.735	−15.079	21.301	−250.115	−53.938	−60.732	3.172
	1100.00	32.862	238.141	215.815	−11.821	24.559	−273.776	−54.086	−61.404	2.916
	1200.00	33.388	241.023	217.797	−8.508	27.872	−297.736	−54.202	−62.064	2.702
	1300.00	33.871	243.715	219.688	−5.145	31.235	−321.974	−54.292	−62.716	2.520
	1400.00	34.311	246.242	221.495	−1.735	34.645	−346.474	−54.360	−63.361	2.364
	1500.00	34.709	248.623	223.225	1.716	38.096	−371.218	−54.411	−64.002	2.229
	1600.00	35.066	250.874	224.884	5.205	41.585	−396.194	−54.449	−64.640	2.110
	1700.00	35.385	253.010	226.476	8.728	45.108	−421.389	−54.477	−65.276	2.006
	1800.00	35.668	255.041	228.007	12.281	48.661	−446.792	−54.497	−65.911	1.913
	1900.00	35.919	256.976	229.481	15.861	52.241	−472.394	−54.513	−66.545	1.829
	2000.00	36.141	258.824	230.902	19.464	55.844	−498.185	−54.526	−67.178	1.754
	2100.00	36.337	260.592	232.274	23.088	59.468	−524.156	−54.539	−67.810	1.687
	2200.00	36.513	262.287	233.600	26.731	63.111	−550.301	−54.552	−68.441	1.625
	2300.00	36.671	263.914	234.883	30.390	66.770	−576.611	−54.567	−69.072	1.569
	2400.00	36.815	265.477	236.126	34.064	70.444	−603.081	−54.585	−69.703	1.517
	2500.00	36.949	266.983	237.330	37.753	74.133	−629.705	−54.606	−70.332	1.470
	2600.00	37.079	268.435	238.498	41.454	77.834	−656.476	−54.629	−70.961	1.426
	2700.00	37.207	269.836	239.633	45.168	81.548	−683.390	−54.656	−71.588	1.385
	2800.00	37.337	271.192	240.736	48.895	85.275	−710.442	−54.684	−72.215	1.347
	2900.00	37.475	272.504	241.809	52.636	89.016	−737.627	−54.714	−72.841	1.312
	3000.00	37.624	273.777	242.854	56.391	92.771	−764.941	−54.743	−73.465	1.279

References

Phase	H / S	C_p
GAS	Co1	Ja1

HCN[g] HYDROGEN CYANIDE (GAS) 27.026

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	35.858	201.820	201.820	135.143	0.000	74.970	135.143	124.727	−21.852
	300.00	35.932	202.042	201.821	135.209	0.066	74.597	135.140	124.662	−21.706
	400.00	39.213	212.857	203.273	138.976	3.833	53.834	134.958	121.197	−15.827
	500.00	41.713	221.885	206.117	143.027	7.884	32.085	134.747	117.780	−12.304
	600.00	43.824	229.681	209.409	147.306	12.163	9.498	134.489	114.410	−9.960
	700.00	45.682	236.579	212.807	151.783	16.640	−13.822	134.198	111.086	−8.289
	800.00	47.347	242.789	216.173	156.436	21.293	−37.795	133.896	107.805	−7.039
	900.00	48.852	248.454	219.450	161.247	26.104	−62.362	133.599	104.562	−6.069
	1000.00	50.215	253.673	222.614	166.202	31.059	−87.471	133.312	101.351	−5.294
	1100.00	51.451	258.518	225.661	171.286	36.143	−113.084	133.040	98.168	−4.662
	1200.00	52.571	263.044	228.589	176.488	41.345	−139.164	132.783	95.009	−4.136
	1300.00	53.584	267.292	231.405	181.797	46.654	−165.683	132.542	91.871	−3.691
	1400.00	54.497	271.297	234.113	187.202	52.059	−192.615	132.319	88.751	−3.311
	1500.00	55.319	275.086	236.719	192.693	57.550	−219.936	132.113	85.646	−2.982
	1600.00	56.056	278.680	239.230	198.263	63.120	−247.625	131.923	82.555	−2.695
	1700.00	56.716	282.099	241.652	203.902	68.759	−275.666	131.749	79.475	−2.442
	1800.00	57.306	285.357	243.990	209.604	74.461	−304.040	131.589	76.405	−2.217
	1900.00	57.831	288.470	246.250	215.361	80.218	−332.732	131.440	73.343	−2.016
	2000.00	58.299	291.449	248.436	221.168	86.025	−361.729	131.301	70.289	−1.836
	2100.00	58.715	294.303	250.553	227.019	91.876	−391.018	131.167	67.242	−1.673
	2200.00	59.087	297.043	252.604	232.909	97.766	−420.586	131.039	64.201	−1.524
	2300.00	59.421	299.677	254.594	238.835	103.692	−450.423	130.913	61.165	−1.389
	2400.00	59.723	302.213	256.526	244.793	109.650	−480.518	130.790	58.135	−1.265
	2500.00	60.000	304.657	258.402	250.779	115.636	−510.863	130.667	55.111	−1.151
	2600.00	60.258	307.015	260.227	256.792	121.649	−541.447	130.544	52.091	−1.047
	2700.00	60.503	309.294	262.002	262.830	127.687	−572.263	130.422	49.076	−0.949
	2800.00	60.741	311.498	263.731	268.892	133.749	−603.303	130.299	46.065	−0.859
	2900.00	60.980	313.634	265.415	274.978	139.835	−634.560	130.178	43.059	−0.776
	3000.00	61.225	315.705	267.057	281.088	145.945	−666.028	130.058	40.057	−0.697

References

Phase	H / S	C_p
GAS	Ja1	Ja1

36.461

HYDROGEN CHLORIDE (GAS) **HCl**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	29.130	186.896	186.896	−92.312	0.000	−148.035	−92.312	−95.293	16.695
	300.00	29.141	187.076	186.896	−92.258	0.054	−148.381	−92.316	−95.311	16.595
	400.00	29.203	195.480	188.042	−89.337	2.975	−167.529	−92.581	−96.272	12.572
	500.00	29.265	201.999	190.205	−86.415	5.897	−187.415	−92.907	−97.158	10.150
	600.00	29.557	207.357	192.630	−83.476	8.836	−207.890	−93.249	−97.975	8.530
	700.00	30.002	211.945	195.070	−80.499	11.813	−228.861	−93.580	−98.737	7.368
	800.00	30.526	215.985	197.436	−77.473	14.839	−250.261	−93.883	−99.452	6.494
	900.00	31.081	219.613	199.702	−74.393	17.919	−272.044	−94.153	−100.132	5.812
	1000.00	31.638	222.916	201.861	−71.257	21.055	−294.173	−94.389	−100.783	5.264
	1100.00	32.181	225.957	203.915	−68.066	24.246	−316.618	−94.594	−101.413	4.816
	1200.00	32.697	228.780	205.871	−64.821	27.491	−339.357	−94.771	−102.025	4.441
	1300.00	33.182	231.416	207.736	−61.527	30.785	−362.368	−94.924	−102.623	4.123
	1400.00	33.632	233.892	209.516	−58.186	34.126	−385.635	−95.056	−103.210	3.851
	1500.00	34.047	236.227	211.220	−54.802	37.510	−409.142	−95.170	−103.788	3.614
	1600.00	34.426	238.436	212.853	−51.378	40.934	−432.876	−95.269	−104.359	3.407
	1700.00	34.771	240.534	214.420	−47.918	44.394	−456.825	−95.357	−104.925	3.224
	1800.00	35.083	242.530	215.926	−44.425	47.887	−480.979	−95.437	−105.485	3.061
	1900.00	35.365	244.435	217.377	−40.902	51.410	−505.328	−95.509	−106.042	2.915
	2000.00	35.618	246.255	218.776	−37.353	54.959	−529.864	−95.577	−106.594	2.784
	2100.00	35.847	247.999	220.126	−33.779	58.533	−554.577	−95.642	−107.143	2.665
	2200.00	36.052	249.671	221.431	−30.184	62.128	−579.461	−95.707	−107.689	2.557
	2300.00	36.239	251.278	222.694	−26.570	65.742	−604.509	−95.772	−108.233	2.458
	2400.00	36.409	252.824	223.918	−22.937	69.375	−629.715	−95.838	−108.773	2.367
	2500.00	36.566	254.313	225.104	−19.288	73.024	−655.072	−95.907	−109.311	2.284
	2600.00	36.713	255.751	226.255	−15.624	76.688	−680.576	−95.980	−109.845	2.207
	2700.00	36.853	257.139	227.373	−11.946	80.366	−706.220	−96.055	−110.377	2.135
	2800.00	36.990	258.481	228.461	−8.254	84.058	−732.002	−96.134	−110.906	2.069
	2900.00	37.128	259.782	229.518	−4.548	87.764	−757.915	−96.217	−111.432	2.007
	3000.00	37.269	261.043	230.548	−0.828	91.484	−783.957	−96.303	−111.956	1.949

References

Phase	H / S	C_p
GAS	Co1	Ja1

HF[g] HYDROGEN FLUORIDE (GAS) 20.006

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	29.131	173.779	173.779	−272.546	0.000	−324.358	−272.546	−274.645	48.117
	300.00	29.139	173.959	173.779	−272.492	0.054	−324.680	−272.548	−274.658	47.822
	400.00	29.180	182.357	174.924	−269.573	2.973	−342.516	−272.688	−275.343	35.956
	500.00	29.139	188.862	177.086	−266.658	5.888	−361.089	−272.916	−275.982	28.832
	600.00	29.205	194.179	179.505	−263.741	8.805	−380.249	−273.201	−276.570	24.078
	700.00	29.361	198.692	181.932	−260.814	11.732	−399.898	−273.517	−277.106	20.678
	800.00	29.582	202.626	184.278	−257.867	14.679	−419.968	−273.850	−277.597	18.125
	900.00	29.847	206.126	186.514	−254.896	17.650	−440.409	−274.190	−278.045	16.137
	1000.00	30.142	209.285	188.636	−251.897	20.649	−461.182	−274.532	−278.455	14.545
	1100.00	30.516	212.178	190.647	−248.862	23.684	−482.257	−274.870	−278.830	13.241
	1200.00	30.934	214.850	192.554	−245.790	26.756	−503.610	−275.202	−279.176	12.152
	1300.00	31.384	217.344	194.366	−242.674	29.872	−525.221	−275.519	−279.494	11.230
	1400.00	31.832	219.686	196.091	−239.513	33.033	−547.074	−275.822	−279.788	10.439
	1500.00	32.261	221.897	197.739	−236.308	36.238	−569.154	−276.110	−280.061	9.753
	1600.00	32.666	223.992	199.315	−233.062	39.484	−591.450	−276.384	−280.316	9.151
	1700.00	33.044	225.984	200.825	−229.776	42.770	−613.949	−276.646	−280.553	8.620
	1800.00	33.396	227.883	202.276	−226.454	46.092	−636.643	−276.897	−280.776	8.148
	1900.00	33.724	229.698	203.672	−223.098	49.448	−659.523	−277.138	−280.985	7.725
	2000.00	34.030	231.435	205.017	−219.710	52.836	−682.580	−277.372	−281.181	7.344
	2100.00	34.316	233.103	206.315	−216.292	56.254	−705.808	−277.598	−281.366	6.999
	2200.00	34.584	234.705	207.569	−212.847	59.699	−729.199	−277.817	−281.541	6.685
	2300.00	34.836	236.248	208.783	−209.376	63.170	−752.747	−278.031	−281.705	6.398
	2400.00	35.075	237.736	209.959	−205.880	66.666	−776.446	−278.240	−281.860	6.135
	2500.00	35.301	239.172	211.098	−202.362	70.184	−800.292	−278.444	−282.007	5.892
	2600.00	35.516	240.561	212.205	−198.821	73.725	−824.279	−278.644	−282.145	5.668
	2700.00	35.721	241.905	213.280	−195.259	77.287	−848.403	−278.839	−282.276	5.461
	2800.00	35.917	243.208	214.326	−191.677	80.869	−872.659	−279.031	−282.400	5.268
	2900.00	36.105	244.472	215.344	−188.076	84.470	−897.043	−279.220	−282.517	5.089
	3000.00	36.287	245.699	216.335	−184.456	88.090	−921.552	−279.406	−282.628	4.921

References

Phase	H / S	C_p
GAS	Ja1,Nb1	Ja1

127.912

HYDROGEN IODIDE (GAS)

HI[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	29.170	206.590	206.590	26.359	0.000	−35.236	26.359	1.559	−0.273
	300.00	29.164	206.770	206.590	26.413	0.054	−35.618	26.336	1.405	−0.245
	400.00	29.252	215.157	207.733	29.328	2.969	−56.734	16.979	−6.428	0.839
	500.00	29.759	221.734	209.898	32.277	5.918	−78.590	−5.631	−10.085	1.054
	600.00	30.419	227.217	212.340	35.285	8.926	−101.045	−5.962	−10.944	0.953
	700.00	31.121	231.959	214.811	38.362	12.003	−124.009	−6.236	−11.751	0.877
	800.00	31.813	236.160	217.222	41.509	15.150	−147.419	−6.451	−12.524	0.818
	900.00	32.471	239.945	219.540	44.724	18.365	−171.227	−6.614	−13.273	0.770
	1000.00	33.085	243.399	221.756	48.002	21.643	−195.397	−6.732	−14.006	0.732
	1100.00	33.648	246.579	223.870	51.339	24.980	−219.898	−6.811	−14.729	0.699
	1200.00	34.160	249.529	225.887	54.730	28.371	−244.705	−6.860	−15.446	0.672
	1300.00	34.621	252.282	227.812	58.169	31.810	−269.797	−6.885	−16.161	0.649
	1400.00	35.034	254.863	229.653	61.652	35.293	−295.156	−6.891	−16.874	0.630
	1500.00	35.400	257.293	231.416	65.174	38.815	−320.764	−6.883	−17.587	0.612
	1600.00	35.723	259.588	233.105	68.731	42.372	−346.610	−6.865	−18.301	0.597
	1700.00	36.007	261.762	234.728	72.318	45.959	−372.678	−6.841	−19.017	0.584
	1800.00	36.255	263.827	236.287	75.931	49.572	−398.958	−6.814	−19.734	0.573
	1900.00	36.471	265.794	237.789	79.568	53.209	−425.440	−6.785	−20.452	0.562
	2000.00	36.661	267.669	239.237	83.224	56.865	−452.114	−6.759	−21.172	0.553
	2100.00	36.827	269.462	240.633	86.899	60.540	−478.971	−6.735	−21.894	0.545
	2200.00	36.973	271.179	241.983	90.589	64.230	−506.004	−6.715	−22.616	0.537
	2300.00	37.106	272.825	243.289	94.293	67.934	−533.205	−6.700	−23.339	0.530
	2400.00	37.227	274.407	244.552	98.010	71.651	−560.567	−6.690	−24.063	0.524
	2500.00	37.343	275.929	245.777	101.738	75.379	−588.084	−6.686	−24.787	0.518
	2600.00	37.457	277.396	246.965	105.478	79.119	−615.751	−6.687	−25.511	0.513
	2700.00	37.573	278.812	248.119	109.230	82.871	−643.561	−6.693	−26.235	0.508
	2800.00	37.697	280.180	249.239	112.993	86.634	−671.511	−6.703	−26.958	0.503
	2900.00	37.832	281.505	250.329	116.770	90.411	−699.596	−6.714	−27.682	0.499
	3000.00	37.984	282.790	251.390	120.560	94.201	−727.811	−6.726	−28.404	0.495

References

Phase	H / S	C_p
GAS	Co1	Ja1

HNCO[g] ISOCYANIC ACID (GAS) 43.025

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	45.041	238.179	238.179	−101.671	0.000	−172.684	−101.671	−92.345	16.178
	300.00	45.157	238.458	238.180	−101.588	0.083	−173.125	−101.684	−92.287	16.069
	400.00	50.728	252.247	240.022	−96.781	4.890	−197.680	−102.312	−89.055	11.629
	500.00	55.004	264.046	243.675	−91.485	10.186	−223.509	−102.808	−85.682	8.951
	600.00	58.409	274.386	247.949	−85.809	15.862	−250.441	−103.248	−82.215	7.157
	700.00	61.229	283.608	252.397	−79.823	21.848	−278.349	−103.658	−78.677	5.871
	800.00	63.629	291.945	256.827	−73.577	28.094	−307.133	−104.035	−75.082	4.902
	900.00	65.703	299.562	261.158	−67.108	34.563	−336.714	−104.377	−71.442	4.146
	1000.00	67.512	306.580	265.354	−60.445	41.226	−367.025	−104.686	−67.766	3.540
	1100.00	69.099	313.091	269.401	−53.613	48.058	−398.013	−104.966	−64.060	3.042
	1200.00	70.494	319.164	273.298	−46.632	55.039	−429.629	−105.218	−60.330	2.626
	1300.00	71.722	324.856	277.047	−39.520	62.151	−461.833	−105.447	−56.580	2.273
	1400.00	72.803	330.212	280.656	−32.292	69.379	−494.589	−105.654	−52.813	1.970
	1500.00	73.754	335.268	284.129	−24.964	76.707	−527.865	−105.843	−49.032	1.707
	1600.00	74.592	340.055	287.476	−17.545	84.126	−561.633	−106.018	−45.238	1.477
	1700.00	75.332	344.600	290.704	−10.048	91.623	−595.868	−106.180	−41.435	1.273
	1800.00	75.987	348.925	293.819	−2.482	99.189	−630.546	−106.333	−37.622	1.092
	1900.00	76.571	353.049	296.829	5.147	106.818	−665.646	−106.481	−33.800	0.929
	2000.00	77.098	356.990	299.739	12.830	114.501	−701.150	−106.624	−29.971	0.783
	2100.00	77.548	360.763	302.556	20.563	122.234	−737.039	−106.769	−26.135	0.650
	2200.00	77.961	364.380	305.285	28.339	130.010	−773.297	−106.917	−22.292	0.529
	2300.00	78.332	367.854	307.930	36.154	137.825	−809.910	−107.068	−18.442	0.419
	2400.00	78.668	371.195	310.497	44.004	145.675	−846.863	−107.226	−14.585	0.317
	2500.00	78.973	374.412	312.989	51.886	153.557	−884.145	−107.390	−10.722	0.224
	2600.00	79.250	377.515	315.412	59.797	161.468	−921.742	−107.562	−6.852	0.138
	2700.00	79.503	380.511	317.768	67.735	169.406	−959.644	−107.744	−2.975	0.058
	2800.00	79.736	383.406	320.061	75.697	177.368	−997.841	−107.935	0.909	−0.017
	2900.00	79.950	386.208	322.294	83.682	185.353	−1036.322	−108.137	4.800	−0.086
	3000.00	80.148	388.922	324.469	91.687	193.358	−1075.079	−108.350	8.697	−0.151

References

Phase	H / S	C_p
GAS	Ja1	Ja1

63.013

NITRIC ACID (GAS) **HNO3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	53.495	266.475	266.475	−134.306	0.000	−213.756	−134.306	−73.964	12.958
	300.00	53.596	266.807	266.476	−134.207	0.099	−214.249	−134.342	−73.589	12.813
	400.00	62.603	283.378	268.674	−128.424	5.882	−241.776	−135.928	−53.077	6.931
	500.00	71.135	298.307	273.132	−121.718	12.588	−270.872	−136.741	−32.256	3.370
	600.00	77.415	311.862	278.476	−114.274	20.032	−301.391	−136.992	−11.328	0.986
	700.00	82.012	324.159	284.138	−106.291	28.015	−333.202	−136.882	9.611	−0.717
	800.00	85.480	335.347	289.850	−97.909	36.397	−366.186	−136.536	30.518	−1.993
	900.00	88.194	345.577	295.482	−89.220	45.086	−400.240	−136.031	51.370	−2.981
	1000.00	90.391	354.987	300.968	−80.287	54.019	−435.274	−135.413	72.161	−3.769
	1100.00	92.227	363.691	306.280	−71.154	63.152	−471.214	−134.711	92.885	−4.411
	1200.00	93.803	371.785	311.405	−61.851	72.455	−507.992	−133.945	113.542	−4.942
	1300.00	95.188	379.349	316.344	−52.400	81.906	−545.553	−133.126	134.133	−5.390
	1400.00	96.429	386.449	321.100	−42.818	91.488	−583.846	−132.263	154.659	−5.770
	1500.00	97.561	393.141	325.682	−33.117	101.189	−622.829	−131.363	175.122	−6.098
	1600.00	98.608	399.471	330.098	−23.308	110.998	−662.463	−130.429	195.524	−6.383
	1700.00	99.588	405.479	334.357	−13.398	120.908	−702.713	−129.466	215.867	−6.633
	1800.00	100.514	411.198	338.468	−3.393	130.913	−743.549	−128.476	236.152	−6.853
	1900.00	101.397	416.656	342.441	6.703	141.009	−784.944	−127.461	256.382	−7.048
	2000.00	102.245	421.879	346.283	16.886	151.192	−826.872	−126.422	276.557	−7.223
	2100.00	103.064	426.887	350.003	27.151	161.457	−869.312	−125.359	296.680	−7.380
	2200.00	103.858	431.700	353.608	37.498	171.804	−912.243	−124.275	316.752	−7.521

References

Phase	H / S	C_p
GAS	Ja1	Ja1

18.015

WATER **H2O**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
LIQ	298.15	75.288	69.950	69.950	−285.830	0.000	−306.686	−285.830	−237.141	41.546
	300.00	75.280	70.416	69.951	−285.691	0.139	−306.815	−285.771	−236.839	41.237
	373.15	75.946	86.881	71.713	−280.170	5.660	−312.590	−283.456	−225.169	31.520

References

Phase	H / S	C_p	Remarks
LIQ	Co1	La1	NBPT= 373.15; BPT= 372.778, L= 40.893 kJ

H_2O[g] WATER (GAS) 18.015

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	33.590	188.959	188.959	−241.826	0.000	−298.164	−241.826	−228.620	40.053
	300.00	33.596	189.167	188.960	−241.764	0.062	−298.514	−241.844	−228.538	39.792
	400.00	34.261	198.910	190.284	−238.375	3.451	−317.939	−242.847	−223.951	29.245
	500.00	35.230	206.656	192.809	−234.902	6.924	−338.230	−243.826	−219.113	22.891
	600.00	36.322	213.174	195.673	−231.326	10.500	−359.230	−244.758	−214.081	18.637
	700.00	37.494	218.860	198.588	−227.635	14.191	−380.838	−245.633	−208.898	15.588
	800.00	38.723	223.947	201.445	−223.825	18.001	−402.982	−246.444	−203.595	13.293
	900.00	39.988	228.580	204.207	−219.889	21.937	−425.612	−247.186	−198.193	11.503
	1000.00	41.267	232.860	206.861	−215.827	25.999	−448.687	−247.858	−192.713	10.066
	1100.00	42.535	236.853	209.408	−211.636	30.190	−472.174	−248.461	−187.168	8.888
	1200.00	43.769	240.607	211.853	−207.321	34.505	−496.049	−248.998	−181.572	7.904
	1300.00	44.943	244.157	214.202	−202.885	38.941	−520.289	−249.475	−175.934	7.069
	1400.00	46.055	247.529	216.463	−198.334	43.492	−544.875	−249.895	−170.260	6.352
	1500.00	47.091	250.742	218.642	−193.676	48.150	−569.789	−250.266	−164.559	5.730
	1600.00	48.050	253.812	220.745	−188.919	52.907	−595.018	−250.593	−158.834	5.185
	1700.00	48.934	256.752	222.777	−184.069	57.757	−620.548	−250.882	−153.090	4.704
	1800.00	49.747	259.572	224.744	−179.134	62.692	−646.365	−251.139	−147.330	4.275
	1900.00	50.496	262.282	226.649	−174.122	67.704	−672.458	−251.369	−141.557	3.892
	2000.00	51.185	264.890	228.496	−169.037	72.789	−698.818	−251.576	−135.772	3.546
	2100.00	51.821	267.403	230.289	−163.886	77.940	−725.433	−251.763	−129.977	3.233
	2200.00	52.407	269.828	232.032	−158.675	83.151	−752.296	−251.935	−124.173	2.948
	2300.00	52.947	272.169	233.726	−153.407	88.419	−779.396	−252.093	−118.363	2.688
	2400.00	53.445	274.433	235.375	−148.087	93.739	−806.727	−252.241	−112.545	2.449
	2500.00	53.904	276.625	236.982	−142.719	99.107	−834.280	−252.381	−106.721	2.230
	2600.00	54.329	278.747	238.547	−137.307	104.519	−862.049	−252.515	−100.892	2.027
	2700.00	54.722	280.805	240.075	−131.854	109.972	−890.028	−252.644	−95.058	1.839
	2800.00	55.088	282.802	241.565	−126.363	115.463	−918.208	−252.772	−89.219	1.664
	2900.00	55.429	284.741	243.021	−120.837	120.989	−946.586	−252.898	−83.376	1.502
	3000.00	55.747	286.625	244.443	−115.278	126.548	−975.155	−253.025	−77.528	1.350
	3100.00	56.044	288.458	245.833	−109.689	132.137	−1003.909	−253.153	−71.676	1.208
	3200.00	56.323	290.242	247.193	−104.070	137.756	−1032.845	−253.284	−65.820	1.074
	3300.00	56.584	291.979	248.524	−98.425	143.401	−1061.956	−253.417	−59.960	0.949
	3400.00	56.830	293.672	249.827	−92.754	149.072	−1091.239	−253.555	−54.095	0.831
	3500.00	57.060	295.323	251.104	−87.059	154.767	−1120.689	−253.697	−48.227	0.720
	3600.00	57.278	296.933	252.355	−81.342	160.484	−1150.302	−253.844	−42.354	0.615
	3700.00	57.483	298.506	253.581	−75.604	166.222	−1180.075	−253.998	−36.477	0.515
	3800.00	57.676	300.041	254.783	−69.846	171.980	−1210.002	−254.158	−30.596	0.421
	3900.00	57.859	301.542	255.963	−64.069	177.757	−1240.082	−254.325	−24.711	0.331
	4000.00	58.033	303.009	257.121	−58.275	183.551	−1270.309	−254.501	−18.821	0.246
	4100.00	58.197	304.444	258.258	−52.463	189.363	−1300.682	−254.684	−12.927	0.165
	4200.00	58.354	305.848	259.374	−46.635	195.191	−1331.197	−254.877	−7.028	0.087
	4300.00	58.503	307.223	260.471	−40.793	201.033	−1361.851	−255.078	−1.125	0.014
	4400.00	58.645	308.569	261.549	−34.935	206.891	−1392.641	−255.289	4.784	−0.057
	4500.00	58.782	309.889	262.608	−29.064	212.762	−1423.564	−255.510	10.697	−0.124
	4600.00	58.914	311.182	263.650	−23.179	218.647	−1454.618	−255.740	16.615	−0.189
	4700.00	59.041	312.451	264.675	−17.281	224.545	−1485.800	−255.981	22.538	−0.250
	4800.00	59.164	313.695	265.684	−11.371	230.455	−1517.107	−256.232	28.467	−0.310
	4900.00	59.285	314.916	266.676	−5.448	236.378	−1548.538	−256.493	34.401	−0.367
	5000.00	59.402	316.115	267.653	0.486	242.312	−1580.090	−256.764	40.340	−0.421

References

Phase	H / S	C_p
GAS	Co1,e	Ja2

34.015 HYDROGEN PEROXIDE **H2O2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
LIQ	298.15	89.098	109.600	109.600	−187.778	0.000	−220.455	−187.778	−120.328	21.081
	300.00	89.098	110.151	109.602	−187.613	0.165	−220.658	−187.721	−119.910	20.878
	400.00	89.098	135.783	113.096	−178.703	9.075	−233.017	−184.688	−97.766	12.767
	500.00	89.098	155.665	119.696	−169.794	17.984	−247.626	−181.760	−76.377	7.979

References

Phase	H / S	C_p
LIQ	Nb1	Nb1

34.015 HYDROGEN PEROXIDE (GAS) **H2O2**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	43.124	232.991	232.991	−136.106	0.000	−205.572	−136.106	−105.445	18.474
	300.00	43.214	233.258	232.992	−136.026	0.080	−206.004	−136.134	−105.255	18.327
	400.00	48.432	246.410	234.749	−131.442	4.664	−230.006	−137.427	−94.756	12.374
	500.00	52.601	257.690	238.236	−126.379	9.727	−255.224	−138.345	−83.975	8.773
	600.00	55.649	267.563	242.318	−120.959	15.147	−281.497	−139.014	−73.035	6.358
	700.00	57.976	276.323	246.562	−115.273	20.833	−308.699	−139.521	−61.997	4.626
	800.00	59.855	284.191	250.782	−109.379	26.727	−336.732	−139.916	−50.894	3.323
	900.00	61.452	291.336	254.897	−103.311	32.795	−365.514	−140.229	−39.746	2.307
	1000.00	62.861	297.885	258.873	−97.095	39.011	−394.979	−140.477	−28.568	1.492
	1100.00	64.137	303.937	262.698	−90.744	45.362	−425.074	−140.674	−17.367	0.825
	1200.00	65.310	309.568	266.372	−84.271	51.835	−455.753	−140.829	−6.150	0.268
	1300.00	66.396	314.839	269.900	−77.685	58.421	−486.976	−140.946	5.078	−0.204
	1400.00	67.402	319.797	273.289	−70.994	65.112	−518.710	−141.033	16.314	−0.609
	1500.00	68.328	324.479	276.547	−64.207	71.899	−550.926	−141.095	27.556	−0.960

References

Phase	H / S	C_p
GAS	Ja1	Ja1

HDO[g] WATER–D1 (GAS) 19.021

Phase	T	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	33.786	199.511	199.511	–245.371	0.000	–304.855	–245.371	–233.182	40.852
	300.00	33.798	199.720	199.512	–245.308	0.063	–305.224	–245.389	–233.106	40.587
	400.00	34.773	209.566	200.848	–241.884	3.487	–325.710	–246.364	–228.864	29.887
	500.00	36.045	217.458	203.405	–238.344	7.027	–347.073	–247.280	–224.381	23.441
	600.00	37.451	224.153	206.318	–234.670	10.701	–369.162	–248.124	–219.721	19.128
	700.00	38.920	230.036	209.295	–230.852	14.519	–391.877	–248.893	–214.925	16.038
	800.00	40.406	235.330	212.223	–226.886	18.485	–415.150	–249.583	–210.025	13.713
	900.00	41.872	240.174	215.064	–222.772	22.599	–438.928	–250.198	–205.042	11.900
	1000.00	43.283	244.659	217.802	–218.513	26.858	–463.173	–250.740	–199.995	10.447
	1100.00	44.621	248.848	220.436	–214.117	31.254	–487.850	–251.214	–194.897	9.255
	1200.00	45.873	252.785	222.969	–209.592	35.779	–512.934	–251.627	–189.759	8.260
	1300.00	47.029	256.503	225.407	–204.946	40.425	–538.400	–251.984	–184.588	7.417
	1400.00	48.087	260.028	227.755	–200.189	45.182	–564.228	–252.293	–179.392	6.693
	1500.00	49.054	263.379	230.019	–195.332	50.039	–590.400	–252.559	–174.175	6.065
	1600.00	49.934	266.573	232.205	–190.382	54.989	–616.898	–252.789	–168.942	5.515
	1700.00	50.734	269.625	234.317	–185.347	60.024	–643.709	–252.989	–163.696	5.030
	1800.00	51.463	272.546	236.360	–180.237	65.134	–670.819	–253.162	–158.438	4.598
	1900.00	52.126	275.346	238.339	–175.057	70.314	–698.215	–253.314	–153.171	4.211
	2000.00	52.730	278.035	240.257	–169.814	75.557	–725.885	–253.448	–147.897	3.863
	2100.00	53.281	280.622	242.118	–164.513	80.858	–753.818	–253.569	–142.616	3.547
	2200.00	53.784	283.112	243.925	–159.159	86.212	–782.006	–253.678	–137.330	3.261
	2300.00	54.245	285.513	245.681	–153.757	91.614	–810.438	–253.779	–132.040	2.999
	2400.00	54.669	287.831	247.389	–148.312	97.059	–839.106	–253.873	–126.745	2.759
	2500.00	55.061	290.071	249.052	–142.825	102.546	–868.001	–253.964	–121.446	2.537
	2600.00	55.420	292.237	250.672	–137.300	108.071	–897.117	–254.052	–116.143	2.333
	2700.00	55.753	294.335	252.250	–131.742	113.629	–926.446	–254.139	–110.837	2.144
	2800.00	56.062	296.368	253.790	–126.151	119.220	–955.982	–254.226	–105.528	1.969
	2900.00	56.349	298.341	255.292	–120.530	124.841	–985.718	–254.316	–100.216	1.805
	3000.00	56.617	300.256	256.759	–114.881	130.490	–1015.648	–254.408	–94.901	1.652
	3100.00	56.868	302.116	258.192	–109.207	136.164	–1045.767	–254.503	–89.582	1.509
	3200.00	57.103	303.925	259.593	–103.508	141.863	–1076.070	–254.603	–84.261	1.375
	3300.00	57.324	305.686	260.964	–97.787	147.584	–1106.551	–254.708	–78.936	1.249
	3400.00	57.531	307.400	262.304	–92.044	153.327	–1137.206	–254.818	–73.608	1.131
	3500.00	57.727	309.071	263.617	–86.281	159.090	–1168.029	–254.935	–68.276	1.019
	3600.00	57.912	310.700	264.902	–80.499	164.872	–1199.018	–255.059	–62.942	0.913
	3700.00	58.086	312.289	266.161	–74.699	170.672	–1230.168	–255.190	–57.603	0.813
	3800.00	58.252	313.840	267.396	–68.882	176.489	–1261.475	–255.329	–52.261	0.718
	3900.00	58.409	315.355	268.606	–63.049	182.322	–1292.935	–255.476	–46.915	0.628
	4000.00	58.558	316.836	269.793	–57.201	188.170	–1324.545	–255.632	–41.566	0.543
	4100.00	58.700	318.284	270.959	–51.338	194.033	–1356.301	–255.796	–36.212	0.461
	4200.00	58.836	319.700	272.102	–45.461	199.910	–1388.201	–255.971	–30.854	0.384
	4300.00	58.965	321.086	273.225	–39.571	205.800	–1420.240	–256.155	–25.492	0.310
	4400.00	59.089	322.443	274.329	–33.668	211.703	–1452.417	–256.349	–20.126	0.239
	4500.00	59.208	323.772	275.413	–27.753	217.618	–1484.728	–256.554	–14.755	0.171
	4600.00	59.322	325.075	276.478	–21.826	223.545	–1517.170	–256.769	–9.379	0.107
	4700.00	59.432	326.352	277.526	–15.889	229.482	–1549.742	–256.995	–3.999	0.044
	4800.00	59.537	327.604	278.556	–9.940	235.431	–1582.440	–257.231	1.387	–0.015
	4900.00	59.639	328.833	279.570	–3.981	241.390	–1615.262	–257.479	6.777	–0.072
	5000.00	59.738	330.039	280.567	1.988	247.359	–1648.206	–257.738	12.173	–0.127

References

Phase	H / S	C_p
GAS	Ja2	Ja2

97.995

PHOSPHORIC ACID **H3PO4**

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL	298.15	106.064	110.499	110.499	−1278.999	0.000	−1311.944	−1278.999	−1118.927	196.031
	300.00	106.608	111.157	110.501	−1278.802	0.197	−1312.149	−1279.035	−1117.934	194.650
	315.50	111.165	116.641	110.669	−1277.115	1.884	−1313.915	−1279.303	−1109.603	183.707
			42.437		13.389					
LIQ	315.50	150.273	159.079	110.669	−1263.726	15.273	−1313.915	−1265.914	−1109.603	183.707
	400.00	175.728	197.640	125.023	−1249.952	29.047	−1329.008	−1263.737	−1067.872	139.450
	500.00	205.853	240.089	143.837	−1230.873	48.126	−1350.918	−1257.793	−1019.535	106.510
	600.00	235.978	280.283	163.254	−1208.781	70.218	−1376.952	−1249.046	−972.659	84.677
	700.00	266.102	318.922	182.748	−1183.677	95.322	−1406.923	−1237.491	−927.469	69.209
	800.00	296.227	356.421	202.124	−1155.561	123.438	−1440.698	−1223.110	−884.128	57.728
	900.00	326.352	393.051	221.310	−1124.432	154.567	−1478.178	−1205.887	−842.760	48.912
	1000.00	356.477	428.995	240.286	−1090.291	188.708	−1519.285	−1185.807	−803.462	41.969

References

Phase	H / S	C_p
SOL	Nb1	Ja1
LIQ	Ja1	Ja1

HS[g] HYDROGEN MONOSULFIDE (GAS) 33.074

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	32.447	195.629	195.629	139.327	0.000	81.000	139.327	110.039	−19.278
	300.00	32.434	195.830	195.630	139.387	0.060	80.638	139.318	109.857	−19.128
	400.00	31.707	205.057	196.893	142.593	3.266	60.570	136.490	100.211	−13.086
	500.00	31.283	212.080	199.256	145.739	6.412	39.699	134.273	91.374	−9.546
	600.00	31.226	217.773	201.882	148.862	9.535	18.198	132.355	82.982	−7.224
	700.00	31.452	222.601	204.505	151.994	12.667	−3.827	130.708	74.885	−5.588
	800.00	31.844	226.825	207.037	155.158	15.831	−26.302	129.036	67.023	−4.376
	900.00	32.315	230.602	209.449	158.365	19.038	−49.177	74.550	60.526	−3.513
	1000.00	32.815	234.033	211.738	161.622	22.295	−72.411	74.469	58.973	−3.080
	1100.00	33.303	237.184	213.910	164.928	25.601	−95.974	74.414	57.426	−2.727
	1200.00	33.761	240.101	215.973	168.281	28.954	−119.840	74.380	55.883	−2.433
	1300.00	34.184	242.821	217.935	171.679	32.352	−143.988	74.363	54.343	−2.184
	1400.00	34.570	245.368	219.804	175.117	35.790	−168.399	74.360	52.803	−1.970
	1500.00	34.921	247.766	221.589	178.592	39.265	−193.057	74.367	51.263	−1.785
	1600.00	35.239	250.030	223.297	182.100	42.773	−217.947	74.381	49.722	−1.623
	1700.00	35.526	252.175	224.933	185.638	46.311	−243.059	74.400	48.181	−1.480
	1800.00	35.787	254.213	226.503	189.204	49.877	−268.379	74.422	46.638	−1.353
	1900.00	36.023	256.154	228.013	192.795	53.468	−293.898	74.446	45.093	−1.240
	2000.00	36.237	258.007	229.467	196.408	57.081	−319.607	74.470	43.548	−1.137
	2100.00	36.432	259.780	230.868	200.042	60.715	−345.497	74.492	42.001	−1.045
	2200.00	36.611	261.479	232.222	203.694	64.367	−371.560	74.513	40.454	−0.960
	2300.00	36.775	263.110	233.529	207.363	68.036	−397.790	74.531	38.905	−0.884
	2400.00	36.929	264.679	234.795	211.049	71.722	−424.180	74.546	37.356	−0.813
	2500.00	37.073	266.189	236.020	214.749	75.422	−450.724	74.558	35.806	−0.748
	2600.00	37.205	267.646	237.209	218.463	79.136	−477.416	74.567	34.256	−0.688
	2700.00	37.329	269.052	238.362	222.189	82.862	−504.252	74.571	32.705	−0.633
	2800.00	37.445	270.412	239.483	225.928	86.601	−531.225	74.571	31.155	−0.581
	2900.00	37.555	271.728	240.572	229.678	90.351	−558.333	74.567	29.604	−0.533
	3000.00	37.659	273.003	241.632	233.439	94.112	−585.569	74.559	28.054	−0.488
	3100.00	37.758	274.239	242.664	237.210	97.883	−612.932	74.545	26.504	−0.447
	3200.00	37.852	275.440	243.670	240.991	101.664	−640.416	74.527	24.954	−0.407
	3300.00	37.942	276.606	244.650	244.780	105.453	−668.019	74.504	23.405	−0.370
	3400.00	38.028	277.740	245.607	248.579	109.252	−695.736	74.475	21.857	−0.336
	3500.00	38.112	278.843	246.541	252.386	113.059	−723.566	74.442	20.310	−0.303
	3600.00	38.192	279.918	247.453	256.201	116.874	−751.504	74.403	18.764	−0.272
	3700.00	38.270	280.966	248.345	260.024	120.697	−779.548	74.359	17.219	−0.243
	3800.00	38.346	281.987	249.217	263.855	124.528	−807.696	74.309	15.676	−0.215
	3900.00	38.420	282.984	250.070	267.693	128.366	−835.945	74.254	14.133	−0.189
	4000.00	38.492	283.958	250.905	271.539	132.212	−864.292	74.194	12.593	−0.164
	4100.00	38.564	284.909	251.723	275.392	136.065	−892.736	74.127	11.053	−0.141
	4200.00	38.634	285.839	252.524	279.252	139.925	−921.273	74.055	9.516	−0.118
	4300.00	38.703	286.749	253.309	283.118	143.791	−949.903	73.978	7.980	−0.097
	4400.00	38.772	287.640	254.079	286.992	147.665	−978.622	73.895	6.446	−0.077
	4500.00	38.841	288.512	254.835	290.873	151.546	−1007.430	73.807	4.914	−0.057
	4600.00	38.909	289.366	255.576	294.760	155.433	−1036.324	73.714	3.384	−0.038
	4700.00	38.977	290.204	256.304	298.655	159.328	−1065.303	73.616	1.856	−0.021
	4800.00	39.045	291.025	257.019	302.556	163.229	−1094.364	73.513	0.331	−0.004
	4900.00	39.114	291.831	257.721	306.464	167.137	−1123.507	73.405	−1.193	0.013
	5000.00	39.183	292.622	258.411	310.379	171.052	−1152.730	73.293	−2.714	0.028

References

Phase	H / S	C_p
GAS	Ja2	Ja2

34.082

HYDROGEN SULFIDE (GAS)

H2S[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
GAS	298.15	34.187	205.753	205.753	−20.502	0.000	−81.847	−20.502	−33.328	5.839
	300.00	34.213	205.965	205.754	−20.439	0.063	−82.228	−20.534	−33.407	5.817
	400.00	35.585	215.992	207.112	−16.950	3.552	−103.347	−24.532	−37.342	4.876
	500.00	37.181	224.100	209.723	−13.313	7.189	−125.363	−27.721	−40.196	4.199
	600.00	38.942	231.033	212.710	−9.508	10.994	−148.128	−30.421	−42.426	3.693
	700.00	40.746	237.171	215.774	−5.524	14.978	−171.544	−32.684	−44.244	3.302
	800.00	42.516	242.728	218.801	−1.360	19.142	−195.543	−34.833	−45.749	2.987
	900.00	44.206	247.835	221.747	2.977	23.479	−220.074	−89.677	−45.836	2.660
	1000.00	45.789	252.575	224.596	7.478	27.980	−245.098	−90.015	−40.945	2.139
	1100.00	47.188	257.006	227.343	12.127	32.629	−270.579	−90.246	−36.026	1.711
	1200.00	48.460	261.167	229.990	16.911	37.413	−296.490	−90.389	−31.090	1.353
	1300.00	49.595	265.092	232.541	21.815	42.317	−322.805	−90.460	−26.145	1.051
	1400.00	50.598	268.805	234.999	26.825	47.327	−349.501	−90.473	−21.197	0.791
	1500.00	51.485	272.327	237.372	31.931	52.433	−376.559	−90.440	−16.250	0.566
	1600.00	52.269	275.675	239.662	37.119	57.621	−403.961	−90.371	−11.306	0.369
	1700.00	52.965	278.865	241.875	42.381	62.883	−431.689	−90.274	−6.367	0.196
	1800.00	53.586	281.910	244.015	47.709	68.211	−459.729	−90.157	−1.435	0.042
	1900.00	54.143	284.823	246.087	53.096	73.598	−488.067	−90.023	3.490	−0.096
	2000.00	54.646	287.613	248.094	58.536	79.038	−516.689	−89.878	8.408	−0.220
	2100.00	55.102	290.290	250.040	64.024	84.526	−545.585	−89.724	13.319	−0.331
	2200.00	55.518	292.863	251.928	69.555	90.057	−574.744	−89.563	18.222	−0.433
	2300.00	55.899	295.340	253.762	75.126	95.628	−604.155	−89.399	23.118	−0.525
	2400.00	56.250	297.726	255.545	80.734	101.236	−633.809	−89.232	28.006	−0.610
	2500.00	56.576	300.029	257.278	86.376	106.878	−663.697	−89.064	32.888	−0.687

References

Phase	H / S	C_p
GAS	Ja1	Ja1

66.148

DIHYDROGEN DISULFIDE (GAS)

H2S2[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
GAS	298.15	51.472	266.463	266.463	15.732	0.000	−63.714	15.732	−5.637	0.988
	300.00	51.560	266.782	266.464	15.827	0.095	−64.207	15.690	−5.769	1.004
	400.00	55.222	282.158	268.536	21.181	5.449	−91.682	8.975	−12.400	1.619
	500.00	57.785	294.768	272.558	26.837	11.105	−120.547	3.903	−17.198	1.797
	600.00	59.917	305.496	277.176	32.724	16.992	−150.573	−0.290	−21.005	1.829
	700.00	61.844	314.878	281.905	38.813	23.081	−181.602	−3.758	−24.178	1.804
	800.00	63.663	323.256	286.560	45.089	29.357	−213.516	−7.154	−26.866	1.754
	900.00	65.418	330.856	291.066	51.544	35.812	−246.227	−116.087	−26.820	1.557
	1000.00	67.134	337.838	295.398	58.172	42.440	−279.666	−116.133	−16.898	0.883

References

Phase	H / S	C_p
GAS	Mi1	Mi1

H2SO4 — SULFURIC ACID — 98.079

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
LIQ	298.15	138.593	156.795	156.795	−813.989	0.000	−860.738	−813.989	−689.889	120.866
	300.00	138.948	157.654	156.798	−813.732	0.257	−861.028	−813.936	−689.119	119.986
	400.00	158.238	200.265	162.478	−798.874	15.115	−878.980	−812.508	−647.930	84.611
	500.00	177.621	237.656	173.841	−782.082	31.907	−900.910	−808.658	−607.218	63.436
	600.00	197.041	271.756	187.356	−763.349	50.640	−926.403	−802.749	−567.448	49.401
	610.00	198.984	275.029	188.766	−761.369	52.620	−929.137	−802.041	−563.532	48.256

References

Phase	H / S	C_p	Remarks
LIQ	Ja1,Nb1	Ja1	Ja1 NBPT= 553. GAS (SO3 + H2SO4 + H2O)

H2SO4[g] — SULFURIC ACID (GAS) — 98.079

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	83.777	298.805	298.805	−735.129	0.000	−824.218	−735.129	−653.369	114.468
	300.00	84.052	299.324	298.807	−734.974	0.155	−824.771	−735.178	−652.861	113.673
	400.00	97.844	325.469	302.278	−725.852	9.277	−856.040	−739.486	−624.990	81.615
	500.00	108.085	348.464	309.263	−715.528	19.601	−889.760	−742.105	−596.069	62.271
	600.00	115.671	368.872	317.530	−704.323	30.806	−925.647	−743.724	−566.692	49.335
	700.00	121.389	387.150	326.193	−692.459	42.670	−963.464	−744.616	−537.110	40.080
	800.00	125.932	403.667	334.861	−680.085	55.044	−1003.018	−745.228	−507.422	33.131
	900.00	129.628	418.720	343.355	−667.301	67.828	−1044.149	−798.436	−476.516	27.656
	1000.00	132.706	432.542	351.592	−654.180	80.949	−1086.721	−797.078	−440.819	23.026

References

Phase	H / S	C_p
GAS	Ja1	Ja1

80.976

HYDROGEN SELENIDE (GAS) **H2Se**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	34.664	218.933	218.933	29.288	0.000	−35.987	29.288	15.575	−2.729
	300.00	34.709	219.147	218.933	29.352	0.064	−36.392	29.252	15.490	−2.697
	400.00	36.804	229.432	220.321	32.932	3.644	−58.841	27.258	11.201	−1.463
	500.00	38.560	237.837	223.009	36.702	7.414	−82.216	19.295	7.508	−0.784
	600.00	40.183	245.012	226.092	40.640	11.352	−106.367	16.789	5.389	−0.469
	700.00	41.743	251.324	229.254	44.737	15.449	−131.190	14.434	3.677	−0.274
	800.00	43.269	256.998	232.374	48.987	19.699	−156.611	12.217	2.293	−0.150
	900.00	44.776	262.181	235.402	53.390	24.102	−182.573	10.130	1.179	−0.068
	1000.00	46.271	266.976	238.322	57.942	28.654	−209.034	8.164	0.291	−0.015
	1100.00	47.758	271.456	241.133	62.644	33.356	−235.958	−46.999	4.548	−0.216
	1200.00	49.239	275.675	243.837	67.494	38.206	−263.317	−47.295	9.248	−0.403
	1300.00	50.717	279.675	246.441	72.491	43.203	−291.086	−47.474	13.968	−0.561
	1400.00	52.192	283.487	248.952	77.637	48.349	−319.245	−47.537	18.698	−0.698
	1500.00	53.665	287.138	251.377	82.930	53.642	−347.778	−47.483	23.428	−0.816
	1600.00	55.136	290.649	253.723	88.370	59.082	−376.668	−47.314	28.150	−0.919
	1700.00	56.606	294.036	255.995	93.957	64.669	−405.904	−47.026	32.858	−1.010
	1800.00	58.076	297.313	258.200	99.691	70.403	−435.472	−46.619	37.546	−1.090
	1900.00	59.544	300.492	260.343	105.572	76.284	−465.363	−46.092	42.208	−1.160
	2000.00	61.012	303.584	262.428	111.600	82.312	−495.567	−45.441	46.839	−1.223

References

Phase	H / S	C_p
GAS	Mi1	Mi1

H2Te[g] HYDROGEN TELLURIDE (GAS) 129.616

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	35.590	228.974	228.974	99.579	0.000	31.310	99.579	85.030	−14.897
	300.00	35.655	229.195	228.975	99.645	0.066	30.887	99.544	84.940	−14.789
	400.00	38.365	239.854	230.410	103.357	3.778	7.415	97.665	80.356	−10.493
	500.00	40.267	248.628	233.202	107.292	7.713	−17.022	95.771	76.247	−7.965
	600.00	41.850	256.113	236.411	111.400	11.821	−42.268	93.823	72.524	−6.314
	700.00	43.283	262.673	239.704	115.657	16.078	−68.214	91.794	69.133	−5.159
	800.00	44.636	268.541	242.948	120.054	20.475	−94.779	72.047	67.919	−4.435
	900.00	45.943	273.875	246.092	124.583	25.004	−121.904	69.836	67.537	−3.920
	1000.00	47.221	278.782	249.119	129.241	29.662	−149.540	67.725	67.396	−3.520
	1100.00	48.479	283.341	252.025	134.027	34.448	−177.649	65.706	67.461	−3.203
	1200.00	49.725	287.613	254.815	138.937	39.358	−206.199	63.773	67.707	−2.947
	1300.00	50.962	291.642	257.494	143.971	44.392	−235.163	61.921	68.111	−2.737
	1400.00	52.192	295.464	260.071	149.129	49.550	−264.520	13.709	71.145	−2.654
	1500.00	53.418	299.107	262.553	154.410	54.831	−294.250	13.590	75.252	−2.621
	1600.00	54.639	302.593	264.947	159.812	60.233	−324.336	13.558	79.365	−2.591
	1700.00	55.858	305.942	267.261	165.337	65.758	−354.764	13.610	83.476	−2.565
	1800.00	57.075	309.169	269.500	170.984	71.405	−385.521	13.749	87.582	−2.542
	1900.00	58.289	312.288	271.670	176.752	77.173	−416.595	13.978	91.679	−2.520
	2000.00	59.503	315.308	273.777	182.642	83.063	−447.975	14.303	95.760	−2.501

References

Phase	H / S	C_p
GAS	Mi1	Mi1

H2WO4 TUNGSTIC ACID 249.863

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	112.658	144.766	144.766	−1131.772	0.000	−1174.934	−1131.772	−1003.905	175.880
	300.00	112.968	145.464	144.769	−1131.563	0.209	−1175.203	−1131.770	−1003.112	174.657
	393.00	128.532	177.976	148.870	−1120.334	11.438	−1190.278	−1131.054	−963.297	128.034

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1	Ja1	NDPT= 393.

249.863

TUNGSTIC ACID (GAS) **H2WO4**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	101.890	351.565	351.565	−905.836	0.000	−1010.655	−905.836	−839.626	147.099
	300.00	102.260	352.197	351.567	−905.647	0.189	−1011.306	−905.854	−839.215	146.120
	400.00	116.178	383.755	355.776	−894.644	11.192	−1048.146	−906.165	−816.924	106.679
	500.00	123.957	410.582	364.125	−882.608	23.228	−1087.898	−905.683	−794.659	83.017
	600.00	129.226	433.673	373.837	−869.935	35.901	−1130.138	−904.816	−772.530	67.255
	700.00	133.231	453.906	383.860	−856.804	49.032	−1174.538	−903.733	−750.566	56.008
	800.00	136.490	471.916	393.762	−843.313	62.523	−1220.846	−902.514	−728.767	47.584
	900.00	139.253	488.155	403.363	−829.522	76.314	−1268.862	−901.197	−707.127	41.041
	1000.00	141.649	502.954	412.593	−815.475	90.361	−1318.429	−899.811	−685.637	35.814
	1100.00	143.753	516.555	421.434	−801.202	104.634	−1369.413	−898.375	−664.289	31.544
	1200.00	145.610	529.145	429.892	−786.732	119.104	−1421.706	−896.905	−643.073	27.992
	1300.00	147.248	540.866	437.983	−772.088	133.748	−1475.213	−895.418	−621.981	24.991
	1400.00	148.685	551.832	445.727	−757.289	148.547	−1529.854	−893.927	−601.003	22.424
	1500.00	149.934	562.134	453.148	−742.357	163.479	−1585.558	−892.447	−580.132	20.202
	1600.00	151.004	571.846	460.266	−727.308	178.528	−1642.261	−890.993	−559.358	18.261
	1700.00	151.900	581.028	467.102	−712.162	193.674	−1699.909	−889.581	−538.675	16.551
	1800.00	152.628	589.732	473.675	−696.934	208.902	−1758.451	−888.221	−518.072	15.034
	1900.00	153.190	598.000	480.003	−681.642	224.194	−1817.841	−886.934	−497.544	13.678
	2000.00	153.590	605.868	486.101	−666.301	239.535	−1878.038	−885.734	−477.081	12.460
	2100.00	153.830	613.368	491.984	−650.929	254.907	−1939.002	−884.632	−456.676	11.359
	2200.00	153.910	620.527	497.665	−635.541	270.295	−2000.700	−883.638	−436.321	10.360
	2300.00	153.832	627.367	503.157	−620.152	285.684	−2063.097	−882.762	−416.009	9.448
	2400.00	153.597	633.910	508.470	−604.780	301.056	−2126.163	−882.023	−395.731	8.613

References

Phase	H / S	C_p
GAS	Ja1	Ja1

He[g] HELIUM (GAS) 4.003

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	20.786	126.148	126.148	0.000	0.000	−37.611	0.000	0.000	0.000
	300.00	20.786	126.277	126.149	0.038	0.038	−37.845	0.000	0.000	0.000
	400.00	20.786	132.257	126.964	2.117	2.117	−50.786	0.000	0.000	0.000
	500.00	20.786	136.895	128.504	4.196	4.196	−64.252	0.000	0.000	0.000
	600.00	20.786	140.685	130.228	6.274	6.274	−78.137	0.000	0.000	0.000
	700.00	20.786	143.889	131.956	8.353	8.353	−92.369	0.000	0.000	0.000
	800.00	20.786	146.665	133.625	10.432	10.432	−106.900	0.000	0.000	0.000
	900.00	20.786	149.113	135.213	12.510	12.510	−121.691	0.000	0.000	0.000
	1000.00	20.786	151.303	136.714	14.589	14.589	−136.714	0.000	0.000	0.000
	1100.00	20.786	153.284	138.132	16.667	16.667	−151.945	0.000	0.000	0.000
	1200.00	20.786	155.093	139.471	18.746	18.746	−167.365	0.000	0.000	0.000
	1300.00	20.786	156.756	140.737	20.825	20.825	−182.959	0.000	0.000	0.000
	1400.00	20.786	158.297	141.937	22.903	22.903	−198.712	0.000	0.000	0.000
	1500.00	20.786	159.731	143.076	24.982	24.982	−214.614	0.000	0.000	0.000
	1600.00	20.786	161.072	144.160	27.060	27.060	−230.655	0.000	0.000	0.000
	1700.00	20.786	162.332	145.192	29.139	29.139	−246.826	0.000	0.000	0.000
	1800.00	20.786	163.521	146.177	31.218	31.218	−263.119	0.000	0.000	0.000
	1900.00	20.786	164.644	147.120	33.296	33.296	−279.528	0.000	0.000	0.000
	2000.00	20.786	165.711	148.023	35.375	35.375	−296.046	0.000	0.000	0.000
	2100.00	20.786	166.725	148.890	37.453	37.453	−312.669	0.000	0.000	0.000
	2200.00	20.786	167.692	149.723	39.532	39.532	−329.390	0.000	0.000	0.000
	2300.00	20.786	168.616	150.524	41.611	41.611	−346.206	0.000	0.000	0.000
	2400.00	20.786	169.500	151.297	43.689	43.689	−363.112	0.000	0.000	0.000
	2500.00	20.786	170.349	152.042	45.768	45.768	−380.104	0.000	0.000	0.000
	2600.00	20.786	171.164	152.762	47.847	47.847	−397.180	0.000	0.000	0.000
	2700.00	20.786	171.949	153.458	49.925	49.925	−414.336	0.000	0.000	0.000
	2800.00	20.786	172.705	154.132	52.004	52.004	−431.569	0.000	0.000	0.000
	2900.00	20.786	173.434	154.785	54.082	54.082	−448.876	0.000	0.000	0.000
	3000.00	20.786	174.139	155.418	56.161	56.161	−466.255	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1

178.490 HAFNIUM **Hf**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	25.736	43.555	43.555	0.000	0.000	−12.986	0.000	0.000	0.000
	300.00	25.750	43.715	43.556	0.048	0.048	−13.067	0.000	0.000	0.000
	400.00	26.512	51.227	44.575	2.661	2.661	−17.830	0.000	0.000	0.000
	500.00	27.274	57.225	46.525	5.350	5.350	−23.262	0.000	0.000	0.000
	600.00	28.036	62.265	48.739	8.116	8.116	−29.243	0.000	0.000	0.000
	700.00	28.798	66.644	50.991	10.957	10.957	−35.693	0.000	0.000	0.000
	800.00	29.560	70.539	53.195	13.875	13.875	−42.556	0.000	0.000	0.000
	900.00	30.321	74.064	55.321	16.869	16.869	−49.789	0.000	0.000	0.000
	1000.00	31.083	77.299	57.359	19.939	19.939	−57.359	0.000	0.000	0.000
	1100.00	31.845	80.297	59.310	23.086	23.086	−65.241	0.000	0.000	0.000
	1200.00	32.607	83.100	61.177	26.308	26.308	−73.412	0.000	0.000	0.000
	1300.00	33.369	85.740	62.966	29.607	29.607	−81.855	0.000	0.000	0.000
	1400.00	34.131	88.241	64.683	32.982	32.982	−90.556	0.000	0.000	0.000
	1500.00	34.892	90.622	66.333	36.433	36.433	−99.500	0.000	0.000	0.000
	1600.00	35.654	92.898	67.923	39.961	39.961	−108.676	0.000	0.000	0.000
	1700.00	36.416	95.083	69.457	43.564	43.564	−118.076	0.000	0.000	0.000
	1800.00	37.178	97.186	70.939	47.244	47.244	−127.690	0.000	0.000	0.000
	1900.00	37.940	99.216	72.374	51.000	51.000	−137.511	0.000	0.000	0.000
	2000.00	38.702	101.182	73.766	54.832	54.832	−147.531	0.000	0.000	0.000
	2013.00	38.801	101.433	73.944	55.336	55.336	−148.848	0.000	0.000	0.000
			3.346		6.736					
SOL−B	2013.00	36.819	104.779	73.944	62.072	62.072	−148.848	0.000	0.000	0.000
	2100.00	36.819	106.337	75.253	65.275	65.275	−158.032	0.000	0.000	0.000
	2200.00	36.819	108.050	76.706	68.957	68.957	−168.752	0.000	0.000	0.000
	2300.00	36.819	109.686	78.104	72.639	72.639	−179.640	0.000	0.000	0.000
	2400.00	36.819	111.253	79.453	76.321	76.321	−190.687	0.000	0.000	0.000
	2500.00	36.819	112.756	80.755	80.003	80.003	−201.888	0.000	0.000	0.000
			9.623		24.058					
LIQ	2500.00	33.472	122.380	80.755	104.061	104.061	−201.888	0.000	0.000	0.000
	2600.00	33.472	123.692	82.382	107.408	107.408	−214.192	0.000	0.000	0.000
	2700.00	33.472	124.956	83.935	110.755	110.755	−226.625	0.000	0.000	0.000
	2800.00	33.472	126.173	85.422	114.102	114.102	−239.182	0.000	0.000	0.000
	2900.00	33.472	127.347	86.848	117.449	117.449	−251.858	0.000	0.000	0.000
	3000.00	33.472	128.482	88.217	120.797	120.797	−264.650	0.000	0.000	0.000
	3100.00	33.472	129.580	89.533	124.144	124.144	−277.553	0.000	0.000	0.000
	3200.00	33.472	130.642	90.801	127.491	127.491	−290.565	0.000	0.000	0.000
	3300.00	33.472	131.672	92.024	130.838	130.838	−303.681	0.000	0.000	0.000
	3400.00	33.472	132.672	93.205	134.185	134.185	−316.898	0.000	0.000	0.000
	3500.00	33.472	133.642	94.347	137.533	137.533	−330.214	0.000	0.000	0.000
	3600.00	33.472	134.585	95.452	140.880	140.880	−343.626	0.000	0.000	0.000
	3700.00	33.472	135.502	96.522	144.227	144.227	−357.130	0.000	0.000	0.000
	3800.00	33.472	136.395	97.559	147.574	147.574	−370.725	0.000	0.000	0.000
	3900.00	33.472	137.264	98.566	150.921	150.921	−384.408	0.000	0.000	0.000
	4000.00	33.472	138.111	99.544	154.269	154.269	−398.177	0.000	0.000	0.000

Hf HAFNIUM [continued] 178.490

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
LIQ	4100.00	33.472	138.938	100.495	157.616	157.616	−412.030	0.000	0.000	0.000
	4200.00	33.472	139.745	101.420	160.963	160.963	−425.964	0.000	0.000	0.000
	4300.00	33.472	140.532	102.321	164.310	164.310	−439.978	0.000	0.000	0.000
	4400.00	33.472	141.302	103.198	167.657	167.657	−454.070	0.000	0.000	0.000
	4500.00	33.472	142.054	104.053	171.005	171.005	−468.238	0.000	0.000	0.000
	4600.00	33.472	142.790	104.887	174.352	174.352	−482.480	0.000	0.000	0.000
	4700.00	33.472	143.509	105.701	177.699	177.699	−496.795	0.000	0.000	0.000
	4800.00	33.472	144.214	106.496	181.046	181.046	−511.182	0.000	0.000	0.000
	4871.00	33.472	144.706	107.050	183.423	183.423	−521.438	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks	
SOL-A	Hu1	Hu1		
SOL−B	Hu1	Hu1		
LIQ	Hu1	Hu1	Hu1	BPT=4871., L=575.46 kJ

178.490

HAFNIUM (GAS)

Hf[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	20.803	186.892	186.892	619.232	0.000	563.510	619.232	576.496	−101.000
	300.00	20.807	187.020	186.892	619.270	0.038	563.164	619.223	576.231	−100.331
	400.00	20.962	193.025	187.710	621.358	2.126	544.148	618.697	561.978	−73.387
	500.00	21.395	197.743	189.261	623.473	4.241	524.602	618.123	547.864	−57.235
	600.00	22.115	201.704	191.013	625.647	6.415	504.624	617.531	533.868	−46.477
	700.00	23.011	205.179	192.793	627.902	8.670	484.277	616.945	519.970	−38.801
	800.00	23.990	208.315	194.540	630.252	11.020	463.600	616.377	506.156	−33.049
	900.00	24.980	211.198	196.233	632.700	13.468	442.622	615.831	492.411	−28.579
	1000.00	25.924	213.879	197.865	635.246	16.014	421.367	615.307	478.726	−25.006
	1100.00	26.795	216.391	199.436	637.883	18.651	399.852	614.797	465.093	−22.085
	1200.00	27.598	218.758	200.949	640.603	21.371	378.094	614.295	451.506	−19.654
	1300.00	28.302	220.995	202.405	643.399	24.167	356.105	613.792	437.960	−17.597
	1400.00	28.900	223.115	203.810	646.260	27.028	333.899	613.278	424.454	−15.837
	1500.00	29.397	225.127	205.164	649.175	29.943	311.486	612.742	410.985	−14.312
	1600.00	29.800	227.037	206.472	652.136	32.904	288.877	612.175	397.553	−12.979
	1700.00	30.121	228.854	207.736	655.133	35.901	266.081	611.568	384.157	−11.804
	1800.00	30.371	230.583	208.957	658.158	38.926	243.109	610.914	370.799	−10.760
	1900.00	30.561	232.230	210.139	661.205	41.973	219.967	610.205	357.478	−9.828
	2000.00	30.702	233.802	211.283	664.268	45.036	196.665	609.436	344.197	−8.989
	2100.00	30.804	235.302	212.392	667.344	48.112	173.209	602.069	331.242	−8.239
	2200.00	30.878	236.737	213.466	670.428	51.196	149.607	601.471	318.359	−7.559
	2300.00	30.932	238.111	214.508	673.519	54.287	125.864	600.880	305.504	−6.938
	2400.00	30.976	239.428	215.519	676.614	57.382	101.987	600.294	292.674	−6.370
	2500.00	31.019	240.693	216.501	679.714	60.482	77.980	599.711	279.868	−5.848
	2600.00	31.069	241.911	217.455	682.818	63.586	53.850	575.410	268.042	−5.385
	2700.00	31.134	243.085	218.382	685.928	66.696	29.600	575.173	256.225	−4.957
	2800.00	31.222	244.218	219.285	689.046	69.814	5.234	574.944	244.416	−4.560
	2900.00	31.314	245.316	220.164	692.172	72.940	−19.243	574.723	232.615	−4.190
	3000.00	31.430	246.379	221.020	695.309	76.077	−43.828	574.513	220.822	−3.845
	3100.00	31.568	247.412	221.855	698.459	79.227	−68.518	574.315	209.036	−3.522
	3200.00	31.729	248.417	222.669	701.624	82.392	−93.309	574.133	197.255	−3.220
	3300.00	31.913	249.396	223.464	704.806	85.574	−118.200	573.967	185.481	−2.936
	3400.00	32.120	250.351	224.241	708.007	88.775	−143.188	573.822	173.710	−2.669
	3500.00	32.350	251.286	225.001	711.230	91.998	−168.270	573.698	161.944	−2.417
	3600.00	32.602	252.201	225.743	714.478	95.246	−193.444	573.598	150.181	−2.179
	3700.00	32.873	253.098	226.471	717.751	98.519	−218.709	573.524	138.421	−1.954
	3800.00	33.164	253.978	227.183	721.053	101.821	−244.063	573.479	126.662	−1.741
	3900.00	33.472	254.843	227.881	724.385	105.153	−269.504	573.463	114.904	−1.539
	4000.00	33.795	255.695	228.566	727.748	108.516	−295.031	573.479	103.146	−1.347
	4100.00	34.132	256.533	229.238	731.144	111.912	−320.643	573.529	91.387	−1.164
	4200.00	34.482	257.360	229.898	734.575	115.343	−346.338	573.612	79.627	−0.990
	4300.00	34.841	258.176	230.546	738.041	118.809	−372.115	573.731	67.864	−0.824
	4400.00	35.209	258.981	231.183	741.543	122.311	−397.973	573.886	56.098	−0.666
	4500.00	35.584	259.776	231.809	745.083	125.851	−423.910	574.078	44.328	−0.515
	4600.00	35.963	260.563	232.426	748.660	129.428	−449.928	574.309	32.553	−0.370
	4700.00	36.345	261.340	233.033	752.276	133.044	−476.023	574.577	20.773	−0.231
	4800.00	36.727	262.109	233.631	755.929	136.697	−502.195	574.883	8.986	−0.098
	4900.00	37.109	262.871	234.220	759.621	140.389	−528.444	0.000	0.000	0.000
	5000.00	37.488	263.624	234.800	763.351	144.119	−554.769	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1

HfB2

HAFNIUM DIBORIDE

200.112

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	49.453	42.677	42.677	−335.975	0.000	−348.699	−335.975	−332.237	58.206
	300.00	49.748	42.984	42.678	−335.883	0.092	−348.778	−335.973	−332.213	57.843
	400.00	60.741	58.989	44.785	−330.293	5.682	−353.889	−335.726	−330.993	43.223
	500.00	66.818	73.249	49.083	−323.892	12.083	−360.516	−335.475	−329.841	34.458
	600.00	70.961	85.816	54.179	−316.992	18.983	−368.482	−335.302	−328.732	28.619
	700.00	74.189	97.006	59.512	−309.730	26.245	−377.634	−335.191	−327.646	24.449
	800.00	76.931	107.095	64.840	−302.171	33.804	−387.847	−335.116	−326.574	21.323
	900.00	79.389	116.301	70.054	−294.353	41.622	−399.023	−335.056	−325.509	18.892
	1000.00	81.672	124.784	75.108	−286.299	49.676	−411.083	−334.997	−324.452	16.948
	1100.00	83.839	132.671	79.987	−278.022	57.953	−423.960	−334.927	−323.400	15.357
	1200.00	85.929	140.056	84.688	−269.533	66.442	−437.601	−334.839	−322.356	14.032
	1300.00	87.963	147.015	89.217	−260.838	75.137	−451.957	−334.726	−321.320	12.911
	1400.00	89.958	153.607	93.583	−251.942	84.033	−466.991	−334.583	−320.294	11.950
	1500.00	91.922	159.880	97.795	−242.848	93.127	−482.668	−334.408	−319.280	11.118

References

Phase	H / S	C_p	Remarks
SOL	Nb1	Nb1,e	Tk1 MPT= 3523.

HfBr4

HAFNIUM TETRABROMIDE

498.106

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	127.612	238.488	238.488	−767.346	0.000	−838.451	−767.346	−734.703	128.717
	300.00	127.729	239.278	238.490	−767.110	0.236	−838.893	−767.437	−734.500	127.888
	400.00	134.072	276.892	243.576	−754.020	13.326	−864.776	−825.925	−711.313	92.888
	500.00	140.415	307.491	253.389	−740.295	27.051	−894.041	−822.274	−683.073	71.360
	600.00	146.758	333.652	264.636	−725.937	41.409	−926.128	−818.118	−655.614	57.076
	700.00	153.101	356.751	276.176	−710.944	56.402	−960.670	−813.437	−628.893	46.929

References

Phase	H / S	C_p
SOL	Pa2	Pa2

498.106 HAFNIUM TETRABROMIDE (GAS) **HfBr4**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	103.555	418.928	418.928	−656.888	0.000	−781.791	−656.888	−678.043	118.790
	300.00	103.609	419.569	418.930	−656.696	0.192	−782.567	−657.024	−678.173	118.080
	400.00	105.512	449.674	423.022	−646.227	10.661	−826.097	−718.132	−672.633	87.837
	500.00	106.403	473.325	430.802	−635.626	21.262	−872.289	−717.605	−661.321	69.088
	600.00	106.897	492.772	439.558	−624.959	31.929	−920.623	−717.140	−650.109	56.597
	700.00	107.203	509.275	448.368	−614.253	42.635	−970.746	−716.746	−638.969	47.680
	800.00	107.409	523.605	456.897	−603.522	53.366	−1022.405	−716.428	−627.881	40.996
	900.00	107.557	536.265	465.026	−592.773	64.115	−1075.411	−716.188	−616.828	35.800
	1000.00	107.669	547.603	472.726	−582.011	74.877	−1129.614	−716.028	−605.797	31.644

References

Phase	H / S	C_p
GAS	Pa2	Pa2

HfC

HAFNIUM CARBIDE

190.501

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	34.421	41.221	41.221	−251.040	0.000	−263.330	−251.040	−248.632	43.559
	300.00	34.611	41.434	41.221	−250.976	0.064	−263.406	−251.040	−248.618	43.288
	400.00	41.484	52.463	42.678	−247.126	3.914	−268.111	−250.840	−247.833	32.364
	500.00	44.958	62.130	45.625	−242.788	8.252	−273.853	−250.522	−247.118	25.816
	600.00	47.093	70.528	49.092	−238.178	12.862	−280.495	−250.258	−246.463	21.457
	700.00	48.597	77.906	52.692	−233.390	17.650	−287.924	−250.089	−245.845	18.345
	800.00	49.763	84.474	56.262	−228.470	22.570	−296.049	−250.011	−245.245	16.013
	900.00	50.734	90.393	59.731	−223.444	27.596	−304.798	−250.012	−244.650	14.199
	1000.00	51.584	95.783	63.070	−218.327	32.713	−314.110	−250.085	−244.051	12.748
	1100.00	52.354	100.737	66.272	−213.129	37.911	−323.940	−250.223	−243.442	11.560
	1200.00	53.069	105.323	69.338	−207.858	43.182	−334.245	−250.419	−242.817	10.570
	1300.00	53.747	109.598	72.272	−202.517	48.523	−344.994	−250.669	−242.174	9.731
	1400.00	54.397	113.605	75.083	−197.109	53.931	−356.156	−250.965	−241.510	9.011
	1500.00	55.027	117.379	77.778	−191.638	59.402	−367.707	−251.304	−240.823	8.386
	1600.00	55.641	120.950	80.366	−186.105	64.935	−379.625	−251.682	−240.112	7.839
	1700.00	56.243	124.342	82.854	−180.510	70.530	−391.891	−252.096	−239.376	7.355
	1800.00	56.835	127.573	85.249	−174.856	76.184	−404.488	−252.542	−238.615	6.924
	1900.00	57.420	130.662	87.558	−169.144	81.896	−417.401	−253.019	−237.829	6.538
	2000.00	57.999	133.622	89.788	−163.373	87.667	−430.616	−253.528	−237.016	6.190
	2100.00	58.574	136.466	91.944	−157.544	93.496	−444.122	−260.601	−235.890	5.867
	2200.00	59.144	139.204	94.030	−151.658	99.382	−457.906	−260.867	−234.707	5.573
	2300.00	59.711	141.845	96.052	−145.715	105.325	−471.959	−261.085	−233.513	5.303
	2400.00	60.275	144.398	98.013	−139.716	111.324	−486.272	−261.256	−232.310	5.056
	2500.00	60.836	146.870	99.918	−133.660	117.380	−500.836	−261.378	−231.102	4.829
	2600.00	61.396	149.267	101.771	−127.549	123.491	−515.643	−285.175	−228.933	4.599
	2700.00	61.954	151.595	103.573	−121.381	129.659	−530.687	−284.865	−226.776	4.387
	2800.00	62.510	153.858	105.329	−115.158	135.882	−545.960	−284.507	−224.631	4.191
	2900.00	63.065	156.061	107.040	−108.879	142.161	−561.457	−284.100	−222.499	4.008
	3000.00	63.619	158.209	108.710	−102.545	148.495	−577.171	−283.644	−220.383	3.837
	3100.00	64.173	160.304	110.341	−96.155	154.885	−593.097	−283.139	−218.282	3.678
	3200.00	64.725	162.350	111.934	−89.710	161.330	−609.230	−282.586	−216.199	3.529
	3300.00	65.276	164.350	113.492	−83.210	167.830	−625.565	−281.983	−214.134	3.389
	3400.00	65.827	166.307	115.017	−76.655	174.385	−642.098	−281.332	−212.087	3.258
	3500.00	66.377	168.223	116.510	−70.045	180.995	−658.825	−280.632	−210.061	3.135
	3600.00	66.927	170.101	117.973	−63.380	187.660	−675.742	−279.884	−208.055	3.019
	3700.00	67.476	171.942	119.406	−56.660	194.380	−692.844	−279.087	−206.070	2.909
	3800.00	68.025	173.748	120.813	−49.884	201.156	−710.129	−278.242	−204.108	2.806
	3900.00	68.574	175.523	122.193	−43.055	207.985	−727.593	−277.349	−202.169	2.708

References

Phase	H / S	C_p	Remarks	
SOL	Nb1/Sh1	Sh1	Ku1	MPT= 4103.

249.395

HAFNIUM DICHLORIDE (GAS) **HfCl2**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	57.737	295.390	295.390	−317.984	0.000	−406.055	−317.984	−326.546	57.210
	300.00	57.787	295.748	295.392	−317.877	0.107	−406.601	−317.988	−326.600	56.866
	400.00	59.584	312.652	297.684	−311.997	5.987	−437.058	−318.187	−329.441	43.021
	500.00	60.489	326.055	302.064	−305.989	11.995	−469.016	−318.440	−332.226	34.707
	600.00	61.042	337.136	307.013	−299.910	18.074	−502.192	−318.762	−334.955	29.160
	700.00	61.430	346.576	312.007	−293.786	24.198	−536.389	−319.156	−337.623	25.194
	800.00	61.729	354.799	316.853	−287.627	30.357	−571.467	−319.621	−340.231	22.215
	900.00	61.976	362.084	321.482	−281.442	36.542	−607.318	−320.155	−342.775	19.894
	1000.00	62.192	368.626	325.875	−275.233	42.751	−643.859	−320.757	−345.257	18.034
	1100.00	62.387	374.562	330.035	−269.004	48.980	−681.023	−321.428	−347.675	16.510
	1200.00	62.568	379.999	333.975	−262.756	55.228	−718.755	−322.167	−350.029	15.236
	1300.00	62.738	385.014	337.711	−256.491	61.493	−757.008	−322.974	−352.319	14.156
	1400.00	62.902	389.669	341.258	−250.209	67.775	−795.745	−323.848	−354.544	13.228
	1500.00	63.060	394.014	344.632	−243.910	74.074	−834.932	−324.789	−356.704	12.422
	1600.00	63.214	398.089	347.847	−237.597	80.387	−874.539	−325.799	−358.799	11.714
	1700.00	63.365	401.926	350.916	−231.268	86.716	−914.542	−326.877	−360.829	11.087
	1800.00	63.513	405.552	353.852	−224.924	93.060	−954.917	−328.023	−362.793	10.528
	1900.00	63.659	408.990	356.664	−218.565	99.419	−995.646	−329.238	−364.692	10.026
	2000.00	63.804	412.259	359.363	−212.192	105.792	−1036.710	−330.521	−366.525	9.573

References

Phase	H / S	C_p
GAS	Tk1	e

$HfCl_3$[g] HAFNIUM TRICHLORIDE (GAS) 284.848

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	76.569	352.821	352.821	−644.336	0.000	−749.529	−644.336	−636.760	111.558
	300.00	76.677	353.295	352.822	−644.194	0.142	−750.183	−644.336	−636.713	110.862
	400.00	80.562	375.959	355.886	−636.307	8.029	−786.690	−644.263	−634.180	82.815
	500.00	82.529	394.167	361.782	−628.143	16.193	−825.227	−644.144	−631.673	65.990
	600.00	83.742	409.329	368.478	−619.825	24.511	−865.423	−644.045	−629.189	54.776
	700.00	84.599	422.305	375.263	−611.406	32.930	−907.020	−643.983	−626.718	46.766
	800.00	85.266	433.647	381.867	−602.912	41.424	−949.830	−643.964	−624.254	40.760
	900.00	85.822	443.723	388.191	−594.357	49.979	−993.707	−643.992	−621.789	36.088
	1000.00	86.310	452.791	394.205	−585.750	58.586	−1038.541	−644.067	−619.318	32.350
	1100.00	86.753	461.038	399.911	−577.096	67.240	−1084.238	−644.190	−616.838	29.291
	1200.00	87.165	468.605	405.325	−568.400	75.936	−1130.726	−644.363	−614.344	26.742
	1300.00	87.556	475.597	410.465	−559.664	84.672	−1177.940	−644.585	−611.833	24.584
	1400.00	87.931	482.099	415.352	−550.890	93.446	−1225.829	−644.857	−609.304	22.733
	1500.00	88.295	488.178	420.007	−542.078	102.258	−1274.346	−645.180	−606.754	21.129
	1600.00	88.650	493.888	424.448	−533.231	111.105	−1323.452	−645.554	−604.180	19.724
	1700.00	88.998	499.273	428.692	−524.348	119.988	−1373.113	−645.980	−601.582	18.484
	1800.00	89.341	504.370	432.756	−515.431	128.905	−1423.297	−646.458	−598.956	17.381
	1900.00	89.680	509.209	436.654	−506.480	137.856	−1473.978	−646.989	−596.303	16.394
	2000.00	90.015	513.818	440.398	−497.496	146.840	−1525.131	−647.573	−593.621	15.504

References

Phase	H / S	C_p
GAS	Tk1	e

$HfCl_4$ HAFNIUM TETRACHLORIDE 320.301

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	120.509	190.665	190.665	−990.353	0.000	−1047.200	−990.353	−901.169	157.881
	300.00	120.637	191.411	190.667	−990.130	0.223	−1047.553	−990.303	−900.616	156.811
	400.00	125.267	226.837	195.466	−977.804	12.549	−1068.539	−987.525	−871.136	113.759
	500.00	127.619	255.067	204.659	−965.149	25.204	−1092.683	−984.701	−842.365	88.001
	588.60	128.934	275.997	213.863	−953.780	36.573	−1116.232	−982.215	−817.352	72.535

References

Phase	H / S	C_p	Remarks
SOL	Nb1,Pa2	Pa2	Pa2 SPT= 588.6, L= 98.02 kJ

320.301 HAFNIUM TETRACHLORIDE (GAS) **HfCl4[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	98.944	372.611	372.611	−885.711	0.000	−996.805	−885.711	−850.774	149.052
	300.00	99.042	373.223	372.613	−885.528	0.183	−997.495	−885.701	−850.558	148.095
	400.00	102.678	402.279	376.550	−875.419	10.292	−1036.331	−885.140	−838.927	109.553
	500.00	104.511	425.409	384.088	−865.050	20.661	−1077.755	−884.602	−827.437	86.442
	600.00	105.557	444.564	392.617	−854.543	31.168	−1121.281	−884.130	−816.050	71.043
	700.00	106.208	460.888	401.233	−843.952	41.759	−1166.574	−883.735	−804.736	60.050
	800.00	106.639	475.100	409.597	−833.308	52.403	−1213.389	−883.420	−793.472	51.808
	900.00	106.939	487.679	417.587	−822.628	63.083	−1261.540	−883.185	−782.244	45.400
	1000.00	107.156	498.958	425.170	−811.923	73.788	−1310.881	−883.033	−771.037	40.275

References

Phase	H / S	C_p
GAS	Pa2	Pa2

254.484 HAFNIUM TETRAFLUORIDE **HfF4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	100.418	112.968	112.968	−1930.498	0.000	−1964.179	−1930.498	−1830.267	320.655
	300.00	100.754	113.590	112.970	−1930.312	0.186	−1964.389	−1930.475	−1829.645	318.569
	400.00	113.139	144.494	117.099	−1919.540	10.958	−1977.338	−1928.744	−1796.273	234.569
	500.00	119.720	170.510	125.252	−1907.869	22.629	−1993.124	−1926.489	−1763.410	184.222
	600.00	124.016	192.739	134.693	−1895.670	34.828	−2011.314	−1924.001	−1731.025	150.699
	700.00	127.233	212.108	144.398	−1883.101	47.397	−2031.577	−1921.374	−1699.068	126.786
	800.00	129.876	229.275	153.955	−1870.242	60.256	−2053.662	−1918.645	−1667.495	108.876
	900.00	132.184	244.708	163.196	−1857.137	73.361	−2077.374	−1915.830	−1636.269	94.967
	1000.00	134.284	258.745	172.059	−1843.812	86.686	−2102.557	−1912.936	−1605.361	83.855
	1100.00	136.249	271.637	180.534	−1830.285	100.213	−2129.085	−1909.968	−1574.747	74.779
	1200.00	138.122	283.573	188.629	−1816.566	113.932	−2156.853	−1906.927	−1544.406	67.226
	1235.50	138.770	287.609	191.415	−1811.651	118.847	−2166.992	−1905.831	−1533.698	64.842

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	Pa2	Pa2	NSPT= 1235.5

HfF4[g] HAFNIUM TETRAFLUORIDE (GAS) 254.484

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	91.041	336.440	336.440	−1669.834	0.000	−1770.144	−1669.834	−1636.231	286.661
	300.00	91.223	337.004	336.442	−1669.665	0.169	−1770.767	−1669.829	−1636.022	284.857
	400.00	97.714	364.265	340.115	−1660.174	9.660	−1805.880	−1669.378	−1624.815	212.179
	500.00	100.844	386.442	347.233	−1650.230	19.604	−1843.451	−1668.849	−1613.736	168.586
	600.00	102.650	405.000	355.357	−1640.048	29.786	−1883.048	−1668.379	−1602.759	139.533
	700.00	103.831	420.918	363.613	−1629.720	40.114	−1924.363	−1667.993	−1591.854	118.786
	800.00	104.680	434.841	371.665	−1619.293	50.541	−1967.166	−1667.696	−1580.998	103.229
	900.00	105.334	447.210	379.384	−1608.791	61.043	−2011.280	−1667.483	−1570.175	91.131
	1000.00	105.869	458.336	386.732	−1598.230	71.604	−2056.566	−1667.353	−1559.370	81.453
	1100.00	106.325	468.449	393.708	−1587.620	82.214	−2102.913	−1667.302	−1548.575	73.536
	1200.00	106.728	477.718	400.328	−1576.967	92.867	−2150.228	−1667.328	−1537.781	66.938
	1300.00	107.093	486.275	406.615	−1566.275	103.559	−2198.433	−1667.429	−1526.982	61.355
	1400.00	107.430	494.224	412.592	−1555.549	114.285	−2247.463	−1667.603	−1516.172	56.569
	1500.00	107.747	501.647	418.284	−1544.790	125.044	−2297.260	−1667.849	−1505.348	52.421

References

Phase	H / S	C_p
GAS	Pa2	Pa2

HfI4 HAFNIUM TETRAIODIDE 686.108

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	144.324	269.868	269.868	−493.712	0.000	−574.173	−493.712	−491.932	86.184
	300.00	144.381	270.761	269.871	−493.445	0.267	−574.673	−493.694	−491.921	85.651
	400.00	147.503	312.724	275.571	−478.851	14.861	−603.940	−524.990	−490.339	64.032
	500.00	150.624	345.974	286.439	−463.944	29.768	−636.931	−609.161	−473.621	49.479
	600.00	153.745	373.712	298.735	−448.726	44.986	−672.953	−604.210	−446.975	38.913
	700.00	156.867	397.646	311.194	−433.195	60.517	−711.548	−599.047	−421.174	31.428
	800.00	159.988	418.797	323.347	−417.353	76.359	−752.390	−593.666	−396.128	25.865

References

Phase	H / S	C_p
SOL	Pa2	Pa2

686.108

HAFNIUM TETRAIODIDE (GAS) **HfI4[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	105.101	443.362	443.362	−364.008	0.000	−496.196	−364.008	−413.955	72.523
	300.00	105.138	444.013	443.364	−363.814	0.194	−497.017	−364.063	−414.265	72.130
	400.00	106.409	474.459	447.507	−353.227	10.781	−543.011	−399.367	−429.409	56.075
	500.00	106.999	498.274	455.365	−342.553	21.455	−591.691	−487.770	−428.380	44.753
	600.00	107.321	517.814	464.194	−331.836	32.172	−642.524	−487.320	−416.546	36.264
	700.00	107.516	534.373	473.066	−321.093	42.915	−695.155	−486.945	−404.781	30.205
	800.00	107.643	548.739	481.647	−310.335	53.673	−749.326	−486.649	−393.065	25.664
	900.00	107.731	561.422	489.820	−299.566	64.442	−804.846	−486.434	−381.380	22.135
	1000.00	107.795	572.777	497.558	−288.790	75.218	−861.566	−486.303	−369.715	19.312

References

Phase	H / S	C_p
GAS	Pa2	Pa2

192.497

HAFNIUM NITRIDE **HfN**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	39.413	48.116	48.116	−373.631	0.000	−387.977	−373.631	−346.427	60.693
	300.00	39.517	48.360	48.117	−373.558	0.073	−388.066	−373.633	−346.258	60.289
	400.00	43.429	60.327	49.722	−369.389	4.242	−393.520	−373.535	−337.139	44.026
	500.00	45.711	70.281	52.867	−364.924	8.707	−400.064	−373.230	−328.073	34.274
	600.00	47.363	78.767	56.494	−360.267	13.364	−407.527	−372.830	−319.078	27.778
	700.00	48.721	86.173	60.216	−355.461	18.170	−415.782	−372.387	−310.154	23.144
	800.00	49.921	92.758	63.879	−350.528	23.103	−424.734	−371.926	−301.295	19.673
	900.00	51.028	98.703	67.424	−345.480	28.151	−434.312	−371.460	−292.494	16.976
	1000.00	52.076	104.134	70.827	−340.324	33.307	−444.458	−370.995	−283.745	14.821
	1100.00	53.085	109.145	74.085	−335.066	38.565	−455.125	−370.532	−275.042	13.061
	1200.00	54.067	113.806	77.203	−329.708	43.923	−466.275	−370.071	−266.382	11.595
	1300.00	55.029	118.172	80.189	−324.253	49.378	−477.876	−369.612	−257.759	10.357
	1400.00	55.976	122.284	83.050	−318.703	54.928	−489.901	−369.153	−249.173	9.297
	1500.00	56.913	126.178	85.797	−313.058	60.573	−502.326	−368.694	−240.619	8.379
	1600.00	57.841	129.881	88.437	−307.321	66.310	−515.130	−368.233	−232.095	7.577
	1700.00	58.764	133.415	90.980	−301.490	72.141	−528.296	−367.769	−223.601	6.870
	1800.00	59.683	136.800	93.432	−295.568	78.063	−541.808	−367.301	−215.134	6.243
	1900.00	60.599	140.052	95.801	−289.554	84.077	−555.652	−366.828	−206.693	5.682
	2000.00	61.514	143.183	98.092	−283.448	90.183	−569.815	−366.348	−198.277	5.178
	2100.00	62.429	146.207	100.312	−277.251	96.380	−584.285	−372.397	−189.598	4.716
	2200.00	63.345	149.132	102.464	−270.962	102.669	−599.053	−371.600	−180.912	4.295

References

Phase	H / S	C_p
SOL	Pa3	Pa3

HfO2 HAFNIUM DIOXIDE 210.489

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	60.251	59.329	59.329	−1144.742	0.000	−1162.431	−1144.742	−1088.280	190.662
	300.00	60.447	59.702	59.330	−1144.630	0.112	−1162.541	−1144.732	−1087.930	189.425
	400.00	67.643	78.207	61.804	−1138.181	6.561	−1169.464	−1143.867	−1069.111	139.612
	500.00	71.460	93.747	66.683	−1131.210	13.532	−1178.083	−1142.644	−1050.559	109.751
	600.00	73.946	107.009	72.326	−1123.932	20.810	−1188.137	−1141.292	−1032.268	89.867
	700.00	75.805	118.553	78.123	−1116.441	28.301	−1199.428	−1139.897	−1014.207	75.681
	800.00	77.329	128.778	83.828	−1108.782	35.960	−1211.804	−1138.493	−996.347	65.055
	900.00	78.659	137.964	89.341	−1100.981	43.761	−1225.149	−1137.091	−978.663	56.800
	1000.00	79.867	146.315	94.627	−1093.054	51.688	−1239.369	−1135.697	−961.135	50.205
	1100.00	80.997	153.981	99.679	−1085.011	59.731	−1254.389	−1134.308	−943.746	44.815
	1200.00	82.073	161.075	104.504	−1076.857	67.885	−1270.146	−1132.926	−926.483	40.329
	1300.00	83.110	167.685	109.112	−1068.597	76.145	−1286.588	−1131.549	−909.336	36.538
	1400.00	84.121	173.881	113.520	−1060.236	84.506	−1303.670	−1130.175	−892.294	33.292
	1500.00	85.111	179.719	117.740	−1051.774	92.968	−1321.352	−1128.806	−875.350	30.482
	1600.00	86.086	185.243	121.788	−1043.214	101.528	−1339.603	−1127.440	−858.498	28.027
	1700.00	87.048	190.491	125.676	−1034.557	110.185	−1358.392	−1126.079	−841.731	25.863
	1800.00	88.002	195.494	129.417	−1025.805	118.937	−1377.693	−1124.722	−825.043	23.942
	1900.00	88.948	200.277	133.022	−1016.957	127.785	−1397.483	−1123.370	−808.431	22.225
	1973.00	89.634	203.643	135.573	−1010.439	134.303	−1412.227	−1122.386	−796.350	21.083
			5.302		10.460					
SOL−B	1973.00	108.784	208.945	135.573	−999.979	144.763	−1412.227	−1111.926	−796.350	21.083
	2000.00	108.784	210.423	136.573	−997.042	147.700	−1417.888	−1111.049	−792.037	20.686
	2100.00	108.784	215.731	140.217	−986.163	158.579	−1439.198	−1114.399	−775.878	19.299
	2200.00	108.784	220.792	143.766	−975.285	169.457	−1461.026	−1111.011	−759.838	18.041
	2300.00	108.784	225.627	147.221	−964.406	180.336	−1483.349	−1107.645	−743.951	16.896
	2400.00	108.784	230.257	150.585	−953.528	191.214	−1506.145	−1104.301	−728.210	15.849
	2500.00	108.784	234.698	153.861	−942.650	202.092	−1529.394	−1100.980	−712.608	14.889
	2600.00	108.784	238.964	157.053	−931.771	212.971	−1553.079	−1121.403	−696.182	13.986
	2700.00	108.784	243.070	160.163	−920.893	223.849	−1577.182	−1117.789	−679.896	13.153
	2800.00	108.784	247.026	163.195	−910.014	234.728	−1601.688	−1114.195	−663.744	12.382
	2900.00	108.784	250.844	166.152	−899.136	245.606	−1626.582	−1110.622	−647.720	11.667
	3000.00	108.784	254.532	169.037	−888.258	256.484	−1651.852	−1107.068	−631.818	11.001
	3100.00	108.784	258.099	171.853	−877.379	267.363	−1677.485	−1103.532	−616.035	10.380
	3173.00	108.784	260.631	173.866	−869.438	275.304	−1696.419	−1100.962	−604.585	9.953
			32.966		104.600					
LIQ	3173.00	108.784	293.596	173.866	−764.838	379.904	−1696.419	−996.362	−604.585	9.953
	3200.00	108.784	294.518	174.880	−761.901	382.841	−1704.358	−995.414	−601.255	9.814
	3300.00	108.784	297.865	178.556	−751.022	393.720	−1733.978	−991.914	−588.992	9.323

References

Phase	H / S	C_p
SOL−A	Nb1	Sh1
SOL−B	Sh1	Sh1
LIQ	Sh1	Sh1

314.108

HAFNIUM STRONTIUM TRIOXIDE

HfSrO3

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL	298.15	103.932	123.846	123.846	−1786.150	0.000	−1823.075	−1786.150	−1701.738	298.137
	300.00	104.233	124.490	123.848	−1785.957	0.193	−1823.305	−1786.136	−1701.214	296.208
	400.00	115.274	156.187	128.095	−1774.913	11.237	−1837.388	−1784.918	−1673.070	218.481
	500.00	121.127	182.594	136.431	−1763.068	23.082	−1854.365	−1783.277	−1645.294	171.883
	600.00	124.937	205.035	146.042	−1750.754	35.396	−1873.775	−1781.571	−1617.858	140.847
	700.00	127.782	224.517	155.892	−1738.112	48.038	−1895.274	−1779.962	−1590.702	118.700
	800.00	130.113	241.736	165.567	−1725.214	60.936	−1918.603	−1778.536	−1563.765	102.103
	900.00	132.146	257.181	174.903	−1712.100	74.050	−1943.562	−1778.115	−1536.913	89.200
	1000.00	133.993	271.201	183.842	−1698.791	87.359	−1969.992	−1776.835	−1510.181	78.884
	1100.00	135.718	284.053	192.376	−1685.305	100.845	−1997.764	−1782.830	−1483.227	70.433
	1200.00	137.361	295.933	200.517	−1671.651	114.499	−2026.770	−1781.236	−1456.061	63.381
	1300.00	138.946	306.991	208.287	−1657.835	128.315	−2056.923	−1779.608	−1429.029	57.419
	1400.00	140.489	317.345	215.711	−1643.863	142.287	−2088.145	−1777.946	−1402.123	52.314
	1500.00	142.000	327.089	222.814	−1629.738	156.412	−2120.371	−1776.248	−1375.338	47.894
	1600.00	143.488	336.301	229.622	−1615.463	170.687	−2153.545	−1774.516	−1348.667	44.029
	1700.00	144.957	345.044	236.156	−1601.041	185.109	−2187.616	−1909.687	−1323.400	40.663
	1800.00	146.412	353.371	242.439	−1586.472	199.678	−2222.540	−1906.457	−1289.005	37.406
	1900.00	147.856	361.326	248.488	−1571.759	214.391	−2258.278	−1903.197	−1254.791	34.497

References

Phase	H / S	C_p	Remarks	
SOL	Tk1	e	Tk1	MPT= 3163., L= 73.2 kJ

200.590

MERCURY

Hg

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
LIQ	298.15	27.979	75.898	75.898	0.000	0.000	−22.629	0.000	0.000	0.000
	300.00	27.963	76.071	75.898	0.052	0.052	−22.770	0.000	0.000	0.000
	400.00	27.404	84.027	76.987	2.816	2.816	−30.795	0.000	0.000	0.000
	500.00	27.177	90.113	79.027	5.543	5.543	−39.514	0.000	0.000	0.000
	600.00	27.141	95.063	81.300	8.258	8.258	−48.780	0.000	0.000	0.000
	629.30	27.161	96.357	81.971	9.053	9.053	−51.584	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks	
LIQ	Hu1	Hu1	Hu1,e	MPT= 234.29, L= 2.3 kJ / BPT= 629.3, L= 59.2 kJ

Hg[g] MERCURY (GAS) 200.590

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	20.786	174.967	174.967	61.404	0.000	9.238	61.404	31.866	−5.583
	300.00	20.786	175.096	174.968	61.442	0.038	8.914	61.391	31.683	−5.517
	400.00	20.786	181.076	175.783	63.521	2.117	−8.909	60.705	21.886	−2.858
	500.00	20.786	185.714	177.323	65.600	4.196	−27.257	60.057	12.256	−1.280
	600.00	20.786	189.504	179.046	67.678	6.274	−46.024	59.421	2.756	−0.240
	700.00	20.786	192.708	180.775	69.757	8.353	−65.139	0.000	0.000	0.000
	800.00	20.786	195.483	182.444	71.836	10.432	−84.551	0.000	0.000	0.000
	900.00	20.786	197.932	184.032	73.914	12.510	−104.224	0.000	0.000	0.000
	1000.00	20.786	200.122	185.533	75.993	14.589	−124.129	0.000	0.000	0.000
	1100.00	20.786	202.103	186.951	78.071	16.667	−144.242	0.000	0.000	0.000
	1200.00	20.786	203.911	188.290	80.150	18.746	−164.544	0.000	0.000	0.000
	1300.00	20.786	205.575	189.556	82.229	20.825	−185.019	0.000	0.000	0.000
	1400.00	20.786	207.116	190.756	84.307	22.903	−205.655	0.000	0.000	0.000
	1500.00	20.786	208.550	191.895	86.386	24.982	−226.439	0.000	0.000	0.000
	1600.00	20.786	209.891	192.978	88.464	27.060	−247.362	0.000	0.000	0.000
	1700.00	20.786	211.151	194.011	90.543	29.139	−268.414	0.000	0.000	0.000
	1800.00	20.786	212.339	194.996	92.622	31.218	−289.589	0.000	0.000	0.000
	1900.00	20.786	213.463	195.939	94.700	33.296	−310.880	0.000	0.000	0.000
	2000.00	20.786	214.530	196.842	96.779	35.375	−332.280	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1

Hg3(AsO4)2 TRIMERCURY DIARSENATE 879.608

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	261.716	323.465	323.465	−1270.974	0.000	−1367.415	−1270.974	−1033.578	181.079
	300.00	262.319	325.086	323.470	−1270.489	0.485	−1368.015	−1270.953	−1032.105	179.706
	400.00	286.234	404.158	334.089	−1242.946	28.028	−1404.610	−1268.600	−952.786	124.421
	500.00	301.474	469.759	354.850	−1213.519	57.455	−1448.399	−1264.724	−874.258	91.333
	600.00	313.300	525.804	378.784	−1182.762	88.212	−1498.244	−1259.993	−796.598	69.350
	700.00	323.514	574.881	403.364	−1150.912	120.062	−1553.329	−1431.015	−699.866	52.225
	800.00	332.868	618.698	427.590	−1118.088	152.886	−1613.046	−1423.239	−595.941	38.911
	852.00	337.520	639.805	439.903	−1100.657	170.317	−1645.771	−1418.985	−542.301	33.248

References

Phase	H / S	C_p
SOL	G1	G1

280.494

MERCURY MONOBROMIDE (GAS) **HgBr**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	37.212	271.546	271.546	104.182	0.000	23.220	104.182	68.540	−12.008
	300.00	37.221	271.777	271.547	104.251	0.069	22.718	104.129	68.319	−11.895
	400.00	37.565	282.536	273.012	107.992	3.810	−5.023	87.865	59.680	−7.793
	500.00	37.785	290.944	275.788	111.760	7.578	−33.712	87.060	52.728	−5.508
	600.00	37.956	297.848	278.906	115.547	11.365	−63.162	86.273	45.936	−3.999
	700.00	38.105	303.711	282.041	119.350	15.168	−93.247	26.710	45.912	−3.426
	800.00	38.242	308.808	285.076	123.168	18.986	−123.878	26.575	48.665	−3.177
	900.00	38.371	313.320	287.968	126.998	22.816	−154.989	26.448	51.434	−2.985
	1000.00	38.496	317.369	290.709	130.842	26.660	−186.527	26.330	54.217	−2.832
	1100.00	38.618	321.044	293.302	134.698	30.516	−218.450	26.220	57.011	−2.707
	1200.00	38.738	324.409	295.756	138.565	34.383	−250.725	26.120	59.814	−2.604
	1300.00	38.856	327.514	298.081	142.445	38.263	−283.324	26.028	62.626	−2.516
	1400.00	38.974	330.398	300.288	146.337	42.155	−316.221	25.945	65.444	−2.442
	1500.00	39.091	333.091	302.386	150.240	46.058	−349.397	25.871	68.268	−2.377
	1600.00	39.207	335.618	304.385	154.155	49.973	−382.834	25.806	71.097	−2.321
	1700.00	39.323	337.998	306.293	158.081	53.899	−416.515	25.751	73.929	−2.272
	1800.00	39.439	340.249	308.117	162.019	57.837	−450.429	25.704	76.765	−2.228
	1900.00	39.554	342.384	309.865	165.969	61.787	−484.561	25.666	79.602	−2.188
	2000.00	39.669	344.416	311.542	169.930	65.748	−518.902	25.637	82.442	−2.153
	2100.00	39.784	346.354	313.154	173.903	69.721	−553.442	25.617	85.283	−2.121
	2200.00	39.899	348.208	314.706	177.887	73.705	−588.170	25.606	88.124	−2.092
	2273.00	39.983	349.512	315.803	180.803	76.621	−613.637	25.603	90.199	−2.073

References

Phase	H / S	C_p
GAS	Ja1	Ja1

360.398

MERCURY DIBROMIDE **HgBr2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	75.316	170.314	170.314	−169.452	0.000	−220.231	−169.452	−152.221	26.668
	300.00	75.371	170.780	170.315	−169.313	0.139	−220.547	−169.504	−152.114	26.485
	400.00	78.299	192.864	173.307	−161.629	7.823	−238.775	−199.067	−140.163	18.303
	500.00	81.228	210.650	179.052	−153.653	15.799	−258.978	−197.510	−125.612	13.123
	514.00	81.638	212.899	179.943	−152.513	16.939	−261.943	−197.270	−123.602	12.561
			34.840		17.908					
LIQ	514.00	102.090	247.740	179.943	−134.605	34.847	−261.943	−179.362	−123.602	12.561
	591.00	102.090	261.991	189.726	−126.744	42.708	−281.580	−176.454	−115.456	10.204

References

Phase	H / S	C_p	Remarks
SOL	Ja1	Ja1	
LIQ	Ja1	Ja1	Ja1 BPT= 591., L= 59.20 kJ

HgBr2[g] MERCURY DIBROMIDE (GAS) 360.398

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	60.277	320.231	320.232	−85.454	0.000	−180.931	−85.454	−112.921	19.783
	300.00	60.301	320.604	320.233	−85.342	0.112	−181.524	−85.534	−113.091	19.691
	400.00	61.162	338.086	322.610	−79.264	6.190	−214.498	−116.702	−115.887	15.133
	500.00	61.580	351.784	327.125	−73.124	12.330	−249.016	−116.982	−115.650	12.082
	600.00	61.814	363.034	332.200	−66.954	18.500	−284.774	−117.244	−115.359	10.043
	700.00	61.957	372.574	337.303	−60.765	24.689	−321.566	−176.289	−108.386	8.088
	800.00	62.050	380.854	342.241	−54.564	30.890	−359.247	−175.915	−98.712	6.445
	900.00	62.115	388.166	346.946	−48.355	37.099	−397.705	−175.543	−89.083	5.170
	1000.00	62.161	394.713	351.401	−42.142	43.312	−436.855	−175.173	−79.497	4.152
	1100.00	62.195	400.639	355.612	−35.924	49.530	−476.627	−174.806	−69.947	3.322
	1200.00	62.221	406.052	359.593	−29.703	55.751	−516.966	−174.444	−60.430	2.630
	1300.00	62.242	411.034	363.361	−23.480	61.974	−557.823	−174.085	−50.944	2.047
	1400.00	62.258	415.647	366.933	−17.255	68.199	−599.160	−173.730	−41.485	1.548
	1500.00	62.271	419.943	370.325	−11.028	74.426	−640.942	−173.379	−32.051	1.116
	1600.00	62.282	423.962	373.553	−4.800	80.654	−683.139	−173.033	−22.640	0.739
	1700.00	62.291	427.738	376.631	1.428	86.882	−725.726	−172.690	−13.251	0.407
	1800.00	62.299	431.299	379.570	7.658	93.112	−768.680	−172.352	−3.882	0.113
	1900.00	62.306	434.667	382.382	13.888	99.342	−811.980	−172.019	5.468	−0.150
	2000.00	62.312	437.863	385.077	20.119	105.573	−855.607	−171.690	14.801	−0.387

References

Phase	H / S	C_p
GAS	Ja1	Ja1

Hg2Br2 DIMERCURY DIBROMIDE 560.988

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	104.601	218.752	218.752	−204.179	0.000	−269.400	−204.179	−178.761	31.318
	300.00	104.719	219.400	218.754	−203.985	0.194	−269.805	−204.229	−178.603	31.098
	400.00	109.581	250.248	222.927	−193.251	10.928	−293.350	−233.505	−163.944	21.409
	500.00	112.962	275.079	230.954	−182.116	22.063	−319.656	−231.517	−146.776	15.334
	600.00	115.760	295.928	240.091	−170.677	33.502	−348.234	−229.225	−130.039	11.321
	666.00	117.446	308.096	246.237	−162.981	41.198	−368.173	−345.578	−112.305	8.808

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1	Ja1	NSPT= 666.

236.043

MERCURY MONOCHLORIDE (GAS) **HgCl[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	36.415	259.957	259.957	78.450	0.000	0.944	78.450	56.834	−9.957
	300.00	36.431	260.182	259.957	78.517	0.067	0.463	78.434	56.700	−9.872
	400.00	37.040	270.757	261.395	82.195	3.745	−26.108	77.614	49.580	−6.474
	500.00	37.366	279.060	264.128	85.916	7.466	−53.614	76.823	42.664	−4.457
	600.00	37.582	285.893	267.202	89.664	11.214	−81.871	76.039	35.905	−3.126
	700.00	37.745	291.699	270.298	93.431	14.981	−110.758	16.468	35.916	−2.680
	800.00	37.881	296.748	273.295	97.213	18.763	−140.186	16.318	38.705	−2.527
	900.00	38.000	301.217	276.154	101.007	22.557	−170.089	16.171	41.512	−2.409
	1000.00	38.109	305.226	278.864	104.812	26.362	−200.414	16.027	44.336	−2.316
	1100.00	38.211	308.863	281.429	108.628	30.178	−231.122	15.887	47.174	−2.240
	1200.00	38.309	312.192	283.856	112.454	34.004	−262.177	15.753	50.024	−2.177
	1300.00	38.404	315.263	286.155	116.290	37.840	−293.551	15.624	52.885	−2.125
	1400.00	38.496	318.112	288.337	120.135	41.685	−325.222	15.499	55.756	−2.080
	1500.00	38.587	320.771	290.412	123.989	45.539	−357.168	15.381	58.635	−2.042
	1600.00	38.677	323.264	292.388	127.852	49.402	−389.371	15.267	61.523	−2.009
	1700.00	38.765	325.612	294.274	131.724	53.274	−421.816	15.159	64.417	−1.979
	1800.00	38.853	327.830	296.077	135.605	57.155	−454.489	15.056	67.318	−1.954
	1900.00	38.940	329.933	297.804	139.495	61.045	−487.378	14.958	70.224	−1.931
	2000.00	39.026	331.933	299.461	143.393	64.943	−520.472	14.866	73.135	−1.910

References

Phase	H / S	C_p
GAS	Ja1	Ja1

271.495

MERCURY DICHLORIDE **HgCl2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	73.915	144.494	144.494	−230.120	0.000	−273.201	−230.120	−184.050	32.245
	300.00	73.979	144.952	144.496	−229.983	0.137	−273.469	−230.098	−183.764	31.996
	400.00	76.924	166.656	147.435	−222.432	7.688	−289.094	−228.778	−168.512	22.005
	500.00	79.377	184.090	153.079	−214.614	15.506	−306.659	−227.258	−153.618	16.048
	550.00	80.522	191.710	156.249	−210.616	19.504	−316.057	−226.429	−146.294	13.894
			35.298		19.414					
LIQ	550.00	102.090	227.008	156.249	−191.202	38.918	−316.057	−207.015	−146.294	13.894
	576.00	102.090	231.723	159.550	−188.548	41.572	−322.021	−206.014	−143.447	13.008

References

Phase	H / S	C_p	Remarks
SOL	Ja1	Ja1	
LIQ	Ja1	Ja1	Ja1 BPT= 576., L= 58.91 kJ

$HgCl_2$[g] MERCURY DICHLORIDE (GAS) 271.495

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	58.112	294.793	294.793	−146.294	0.000	−234.187	−146.294	−145.035	25.410
	300.00	58.157	295.153	294.794	−146.186	0.108	−234.732	−146.301	−145.028	25.252
	400.00	59.829	312.141	297.099	−140.277	6.017	−265.134	−146.623	−144.552	18.877
	500.00	60.683	325.593	301.500	−134.247	12.047	−297.044	−146.891	−144.003	15.044
	600.00	61.174	336.704	306.468	−128.152	18.142	−330.175	−147.146	−143.401	12.484
	700.00	61.479	346.159	311.480	−122.018	24.276	−364.330	−206.188	−136.119	10.157
	800.00	61.682	354.382	316.340	−115.860	30.434	−399.366	−205.813	−126.134	8.236
	900.00	61.822	361.656	320.978	−109.684	36.610	−435.175	−205.442	−116.197	6.744
	1000.00	61.923	368.175	325.378	−103.497	42.797	−471.672	−205.074	−106.300	5.553
	1100.00	61.998	374.081	329.541	−97.300	48.994	−508.789	−204.710	−96.441	4.580
	1200.00	62.056	379.478	333.481	−91.098	55.196	−546.471	−204.350	−86.614	3.770
	1300.00	62.100	384.447	337.213	−84.890	61.404	−584.670	−203.994	−76.817	3.087
	1400.00	62.135	389.050	340.753	−78.678	67.616	−623.348	−203.642	−67.047	2.502
	1500.00	62.164	393.338	344.117	−72.463	73.831	−662.470	−203.294	−57.303	1.995
	1600.00	62.187	397.351	347.320	−66.245	80.049	−702.007	−202.951	−47.581	1.553
	1700.00	62.207	401.122	350.375	−60.026	86.268	−741.932	−202.613	−37.881	1.164
	1800.00	62.224	404.678	353.294	−53.804	92.490	−782.224	−202.281	−28.201	0.818
	1900.00	62.238	408.042	356.088	−47.581	98.713	−822.861	−201.954	−18.538	0.510
	2000.00	62.250	411.235	358.766	−41.356	104.938	−863.827	−201.633	−8.893	0.232

References

Phase	H / S	C_p
GAS	Ja1	Ja1

Hg_2Cl_2 DIMERCURY DICHLORIDE 472.085

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	101.948	192.535	192.535	−264.927	0.000	−322.331	−264.927	−210.551	36.888
	300.00	102.041	193.166	192.537	−264.738	0.189	−322.688	−264.905	−210.214	36.601
	400.00	106.131	223.118	196.593	−254.317	10.610	−343.564	−263.479	−192.188	25.097
	500.00	109.271	247.148	204.379	−243.542	21.385	−367.116	−261.730	−174.562	18.236
	600.00	112.038	267.319	213.232	−232.475	32.452	−392.866	−259.726	−157.312	13.695
	655.00	113.477	277.207	218.194	−226.273	38.654	−407.844	−376.670	−143.132	11.414

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1	Ja1	NSPT= 655.

219.588

MERCURY MONOFLUORIDE (GAS) **HgF[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	34.608	248.380	248.380	2.929	0.000	−71.125	2.929	−18.265	3.200
	300.00	34.644	248.594	248.380	2.993	0.064	−71.585	2.912	−18.396	3.203
	400.00	35.946	258.764	249.758	6.531	3.602	−96.974	2.079	−25.371	3.313
	500.00	36.595	266.861	252.397	10.161	7.232	−123.269	1.301	−32.143	3.358
	600.00	36.986	273.570	255.382	13.842	10.913	−150.300	0.530	−38.759	3.374
	700.00	37.256	279.293	258.400	17.555	14.626	−177.951	−59.031	−38.608	2.881
	800.00	37.462	284.282	261.330	21.291	18.362	−206.135	−59.177	−35.681	2.330
	900.00	37.630	288.704	264.130	25.046	22.117	−234.788	−59.324	−32.735	1.900
	1000.00	37.774	292.677	266.790	28.816	25.887	−263.861	−59.473	−29.773	1.555
	1100.00	37.903	296.283	269.309	32.600	29.671	−293.311	−59.621	−26.795	1.272
	1200.00	38.022	299.586	271.697	36.396	33.467	−323.107	−59.767	−23.805	1.036
	1300.00	38.133	302.634	273.961	40.204	37.275	−353.220	−59.911	−20.802	0.836
	1400.00	38.240	305.464	276.111	44.023	41.094	−383.627	−60.052	−17.788	0.664
	1500.00	38.342	308.106	278.157	47.852	44.923	−414.307	−60.190	−14.765	0.514
	1600.00	38.441	310.583	280.107	51.691	48.762	−445.242	−60.325	−11.732	0.383
	1700.00	38.538	312.917	281.969	55.540	52.611	−476.419	−60.455	−8.691	0.267
	1800.00	38.633	315.122	283.750	59.399	56.470	−507.822	−60.581	−5.642	0.164
	1900.00	38.727	317.214	285.457	63.267	60.338	−539.439	−60.704	−2.587	0.071
	2000.00	38.819	319.202	287.095	67.144	64.215	−571.261	−60.821	0.475	−0.012

References

Phase	H / S	C_p
GAS	Ja1	Ja1

238.587

MERCURY DIFLUORIDE **HgF2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	74.857	116.315	116.315	−422.584	0.000	−457.263	−422.584	−374.171	65.553
	300.00	74.895	116.778	116.317	−422.445	0.139	−457.479	−422.555	−373.871	65.097
	400.00	76.986	138.611	119.279	−414.851	7.733	−470.296	−420.939	−357.884	46.735
	500.00	79.077	156.014	124.943	−407.048	15.536	−485.055	−419.226	−342.316	35.761
	600.00	81.169	170.617	131.370	−399.036	23.548	−501.406	−417.401	−327.103	28.477
	700.00	83.261	183.286	137.901	−390.814	31.770	−519.115	−474.229	−305.568	22.802
	800.00	85.353	194.541	144.290	−382.384	40.200	−538.016	−471.483	−281.659	18.390
	900.00	87.446	204.714	150.448	−373.744	48.840	−557.987	−468.570	−258.104	14.980
	918.00	87.822	206.450	151.529	−372.166	50.418	−561.687	−468.027	−253.900	14.447
			25.068		23.012					
LIQ	918.00	102.090	231.517	151.529	−349.154	73.430	−561.687	−445.015	−253.900	14.447
	919.00	102.090	231.629	151.616	−349.052	73.532	−561.919	−444.970	−253.692	14.420

References

Phase	H / S	C_p	Remarks
SOL	Ja1	Ja1	
LIQ	Ja1	Ja1	Ja1 BPT= 919., L= 92.0 kJ

HgF2[g] MERCURY DIFLUORIDE (GAS) 238.587

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	53.970	265.982	265.982	−293.717	0.000	−373.019	−293.717	−289.927	50.794
	300.00	54.040	266.316	265.983	−293.617	0.100	−373.512	−293.727	−289.904	50.477
	400.00	56.962	282.301	268.142	−288.053	5.664	−400.974	−294.141	−288.562	37.682
	500.00	58.650	295.210	272.307	−282.265	11.452	−429.870	−294.443	−287.131	29.996
	600.00	59.677	306.001	277.048	−276.345	17.372	−459.946	−294.711	−285.643	24.867
	700.00	60.339	315.254	281.861	−270.342	23.375	−491.019	−353.757	−277.473	20.705
	800.00	60.788	323.342	286.551	−264.284	29.433	−522.958	−353.384	−266.601	17.407
	900.00	61.104	330.521	291.045	−258.189	35.528	−555.658	−353.015	−255.775	14.845
	1000.00	61.335	336.972	295.321	−252.066	41.651	−589.038	−352.651	−244.990	12.797
	1100.00	61.508	342.826	299.377	−245.924	47.793	−623.032	−352.293	−234.242	11.123
	1200.00	61.641	348.184	303.224	−239.766	53.951	−657.586	−351.943	−223.525	9.730
	1300.00	61.744	353.122	306.875	−233.597	60.120	−692.655	−351.598	−212.838	8.552
	1400.00	61.827	357.701	310.344	−227.418	66.299	−728.199	−351.261	−202.177	7.543
	1500.00	61.894	361.969	313.645	−221.232	72.485	−764.185	−350.930	−191.539	6.670
	1600.00	61.950	365.965	316.792	−215.039	78.678	−800.583	−350.606	−180.924	5.907
	1700.00	61.996	369.722	319.796	−208.842	84.875	−837.370	−350.289	−170.328	5.234
	1800.00	62.036	373.267	322.669	−202.640	91.077	−874.521	−349.979	−159.752	4.636
	1900.00	62.070	376.622	325.421	−196.435	97.282	−912.017	−349.675	−149.192	4.102
	2000.00	62.100	379.807	328.061	−190.226	103.491	−949.840	−349.378	−138.648	3.621

References

Phase	H / S	C_p
GAS	Ja1	Ja1

Hg2F2 DIMERCURY DIFLUORIDE 439.177

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	100.270	160.666	160.666	−485.344	0.000	−533.246	−485.344	−427.525	74.901
	300.00	100.386	161.286	160.668	−485.158	0.186	−533.544	−485.320	−427.167	74.376
	400.00	105.238	190.885	164.670	−474.858	10.486	−551.212	−483.762	−408.005	53.280
	500.00	108.657	214.751	172.376	−464.156	21.188	−571.532	−481.877	−389.279	40.668
	600.00	111.512	234.819	181.154	−453.145	32.199	−594.037	−479.768	−370.954	32.294
	700.00	114.100	252.206	190.090	−441.863	43.481	−618.407	−595.035	−339.722	25.350
	800.00	116.546	267.603	198.835	−430.330	55.014	−644.412	−591.265	−303.504	19.817
	900.00	118.910	281.467	207.258	−418.556	66.788	−671.876	−587.296	−267.770	15.541
	949.00	120.048	287.801	211.255	−412.702	72.642	−685.825	−585.278	−250.427	13.784

References

Phase	H / S	C_p	Remarks
SOL	Ja1	Ja1	Ja1 NDPT= 949. GAS (Hg + HgF2)

201.598

MERCURY MONOHYDRIDE (GAS) **HgH**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	29.905	219.711	219.711	238.488	0.000	172.981	238.488	215.091	−37.683
	300.00	29.948	219.896	219.711	238.543	0.055	172.575	238.465	214.946	−37.425
	400.00	31.746	228.777	220.910	241.635	3.147	150.124	237.339	207.282	−27.068
	500.00	33.012	236.003	223.228	244.876	6.388	126.874	236.391	199.881	−20.881
	600.00	34.038	242.116	225.880	248.229	9.741	102.960	235.566	192.658	−16.772
	700.00	34.926	247.431	228.587	251.679	13.191	78.477	176.047	192.203	−14.342
	800.00	35.716	252.147	231.243	255.211	16.723	53.494	176.025	194.514	−12.700
	900.00	36.430	256.396	233.805	258.819	20.331	28.063	176.067	196.823	−11.423
	1000.00	37.077	260.268	236.261	262.495	24.007	2.227	176.163	199.124	−10.401
	1100.00	37.665	263.830	238.607	266.233	27.745	−23.980	176.302	201.414	−9.564
	1200.00	38.195	267.130	240.848	270.026	31.538	−50.530	176.478	203.690	−8.866
	1300.00	38.671	270.207	242.990	273.870	35.382	−77.399	176.683	205.949	−8.275
	1400.00	39.094	273.088	245.038	277.759	39.271	−104.565	176.910	208.192	−7.768
	1500.00	39.466	275.798	246.999	281.687	43.199	−132.011	177.156	210.418	−7.327
	1600.00	39.786	278.356	248.880	285.650	47.162	−159.719	177.415	212.627	−6.942
	1700.00	40.056	280.776	250.685	289.643	51.155	−187.677	177.682	214.820	−6.601
	1800.00	40.275	283.072	252.421	293.660	55.172	−215.871	177.954	216.996	−6.297
	1900.00	40.444	285.255	254.093	297.696	59.208	−244.288	178.225	219.158	−6.025
	2000.00	40.564	287.332	255.703	301.747	63.259	−272.918	178.492	221.305	−5.780

References

Phase	H / S	C_p
GAS	Ja1	Ja1

HgI[g] MERCURY MONOIODIDE (GAS) 327.494

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
GAS	298.15	37.992	280.722	280.722	133.470	0.000	49.773	133.470	89.716	−15.718
	300.00	37.997	280.957	280.723	133.540	0.070	49.253	133.438	89.444	−15.574
	400.00	38.247	291.922	282.216	137.352	3.882	20.584	123.667	75.321	−9.836
	500.00	38.497	300.484	285.044	141.190	7.720	−9.052	100.680	65.473	−6.840
	600.00	38.747	307.525	288.221	145.052	11.582	−39.463	99.952	58.501	−5.093
	700.00	38.997	313.516	291.418	148.939	15.469	−70.522	40.459	58.286	−4.349
	800.00	39.248	318.740	294.513	152.851	19.381	−102.141	40.406	60.837	−3.972
	900.00	39.498	323.377	297.468	156.789	23.319	−134.251	40.375	63.393	−3.679
	1000.00	39.748	327.552	300.271	160.751	27.281	−166.801	40.365	65.951	−3.445
	1100.00	39.998	331.352	302.926	164.738	31.268	−199.749	40.376	68.509	−3.253
	1200.00	40.248	334.843	305.442	168.751	35.281	−233.061	40.409	71.066	−3.093
	1300.00	40.499	338.074	307.830	172.788	39.318	−266.709	40.464	73.618	−2.958
	1400.00	40.749	341.085	310.099	176.850	43.380	−300.668	40.541	76.166	−2.842
	1500.00	40.999	343.905	312.259	180.938	47.468	−334.919	40.640	78.707	−2.741
	1600.00	41.249	346.559	314.321	185.050	51.580	−369.444	40.760	81.241	−2.652
	1700.00	41.499	349.067	316.292	189.187	55.717	−404.226	40.903	83.767	−2.574
	1800.00	41.750	351.446	318.179	193.350	59.880	−439.253	41.068	86.284	−2.504
	1900.00	42.000	353.710	319.990	197.537	64.067	−474.511	41.255	88.791	−2.441
	2000.00	42.250	355.871	321.731	201.750	68.280	−509.991	41.464	91.288	−2.384

References

Phase	H / S	C_p
GAS	Ja1	Ja1

HgI2 MERCURY DIIODIDE 454.399

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL−A	298.15	77.746	181.326	181.326	−105.437	0.000	−159.499	−105.437	−102.243	17.913
	300.00	77.823	181.807	181.328	−105.293	0.144	−159.835	−105.446	−102.223	17.799
	400.00	82.006	204.769	184.430	−97.302	8.135	−179.209	−121.857	−100.529	13.128
	402.00	82.090	205.178	184.532	−97.138	8.299	−179.619	−121.909	−100.422	13.048
			6.256		2.515					
SOL−B	402.00	84.119	211.434	184.532	−94.623	10.814	−179.619	−119.394	−100.422	13.048
	500.00	84.119	229.785	191.669	−86.379	19.058	−201.271	−161.855	−91.734	9.583
	530.00	84.119	234.687	193.966	−83.855	21.582	−208.239	−161.270	−87.544	8.628
			35.785		18.966					
LIQ	530.00	102.090	270.472	193.966	−64.889	40.548	−208.239	−142.304	−87.544	8.628
	600.00	102.090	283.136	203.646	−57.743	47.694	−227.625	−139.685	−80.477	7.006
	626.00	102.090	287.467	207.038	−55.089	50.348	−235.043	−138.714	−77.932	6.503

References

Phase	H / S	C_p	Remarks
SOL−A	Nb1/Ja1	Ja1	
SOL−B	Ja1	Ja1	
LIQ	Ja1	Ja1	Ja2 BPT= 626., L= 59.166 kJ

454.399

MERCURY DIIODIDE (GAS) **HgI2**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	61.116	336.214	336.214	−16.129	0.000	−116.371	−16.129	−59.115	10.357
	300.00	61.131	336.592	336.215	−16.016	0.113	−116.994	−16.168	−59.381	10.339
	400.00	61.662	354.262	338.621	−9.872	6.257	−151.577	−34.428	−72.897	9.519
	500.00	61.909	368.052	343.179	−3.693	12.436	−187.718	−79.169	−78.181	8.167
	600.00	62.043	379.352	348.294	2.506	18.635	−225.105	−79.436	−77.958	6.787
	700.00	62.125	388.922	353.432	8.714	24.843	−263.531	−138.490	−71.053	5.302
	800.00	62.178	397.222	358.398	14.930	31.059	−302.848	−138.125	−61.444	4.012
	900.00	62.215	404.548	363.127	21.149	37.278	−342.943	−137.764	−51.880	3.011
	1000.00	62.242	411.104	367.603	27.372	43.501	−383.732	−137.407	−42.357	2.212
	1100.00	62.262	417.037	371.831	33.598	49.727	−425.143	−137.056	−32.869	1.561
	1200.00	62.277	422.455	375.827	39.825	55.954	−467.122	−136.708	−23.413	1.019
	1300.00	62.290	427.441	379.608	46.053	62.182	−509.620	−136.366	−13.985	0.562
	1400.00	62.300	432.057	383.192	52.282	68.411	−552.598	−136.029	−4.584	0.171
	1500.00	62.308	436.356	386.595	58.513	74.642	−596.021	−135.698	4.793	−0.167
	1600.00	62.315	440.377	389.832	64.744	80.873	−639.860	−135.371	14.149	−0.462
	1700.00	62.321	444.155	392.917	70.976	87.105	−684.088	−135.050	23.484	−0.722
	1800.00	62.326	447.718	395.864	77.208	93.337	−728.684	−134.734	32.800	−0.952
	1900.00	62.331	451.088	398.682	83.441	99.570	−773.625	−134.424	42.099	−1.157
	2000.00	62.335	454.285	401.383	89.674	105.803	−818.895	−134.119	51.382	−1.342

References

Phase	H / S	C_p
GAS	Ja1	Ja1

654.989

DIMERCURY DIIODIDE **Hg2I2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	105.845	241.291	241.291	−119.085	0.000	−191.026	−119.085	−111.140	19.471
	300.00	105.956	241.946	241.293	−118.889	0.196	−191.473	−119.093	−111.091	19.343
	400.00	110.489	273.104	245.511	−108.048	11.037	−217.289	−135.419	−107.814	14.079
	500.00	113.581	298.106	253.611	−96.837	22.248	−245.891	−177.857	−96.840	10.117
	563.00	115.213	311.682	259.363	−89.629	29.456	−265.106	−176.432	−86.717	8.045
			48.306		27.196					
LIQ	563.00	136.398	359.987	259.363	−62.433	56.652	−265.106	−149.236	−86.717	8.045
	600.00	136.398	368.669	265.839	−57.387	61.698	−278.588	−147.586	−82.661	7.196
	630.00	136.398	375.324	270.895	−53.295	65.790	−289.749	−264.711	−79.302	6.575

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja1	NBPT= 630.

HgO — MERCURY OXIDE (RED) — 216.589

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	44.063	70.270	70.270	−90.789	0.000	−111.740	−90.789	−58.529	10.254
	300.00	44.144	70.543	70.271	−90.707	0.082	−111.870	−90.786	−58.329	10.156
	400.00	48.328	83.833	72.055	−86.078	4.711	−119.611	−90.407	−47.555	6.210
	500.00	51.622	94.987	75.555	−81.073	9.716	−128.566	−89.658	−36.922	3.857
	600.00	54.134	104.631	79.615	−75.779	15.010	−138.558	−88.659	−26.465	2.304
	700.00	56.056	113.127	83.808	−70.266	20.523	−149.455	−146.272	−9.552	0.713
	800.00	57.512	120.712	87.955	−64.584	26.205	−161.153	−144.337	9.848	−0.643

References

Phase	H / S	C_p	Remarks
SOL	Ja1	Ja1	Ja1 DEC., 749.K, GAS (Hg + O2), p= 1.87 bar

HgO[g] — MERCURY OXIDE (GAS) — 216.589

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	32.884	238.597	238.597	41.840	0.000	−29.298	41.840	23.913	−4.190
	300.00	32.918	238.801	238.598	41.901	0.061	−29.739	41.822	23.802	−4.144
	400.00	34.459	248.498	239.910	45.275	3.435	−54.124	40.946	17.932	−2.342
	500.00	35.436	256.300	242.433	48.774	6.934	−79.376	40.188	12.268	−1.282
	600.00	36.068	262.821	245.302	52.351	10.511	−105.341	39.471	6.752	−0.588
	700.00	36.499	268.415	248.214	55.981	14.141	−131.910	−20.026	7.993	−0.596
	800.00	36.810	273.310	251.051	59.647	17.807	−159.001	−20.106	12.001	−0.784
	900.00	37.044	277.660	253.771	63.340	21.500	−186.554	−20.195	16.019	−0.930
	1000.00	37.229	281.572	256.358	67.054	25.214	−214.518	−20.290	20.048	−1.047
	1100.00	37.379	285.128	258.815	70.785	28.945	−242.856	−20.393	24.087	−1.144
	1200.00	37.505	288.386	261.145	74.529	32.689	−271.534	−20.501	28.135	−1.225
	1300.00	37.614	291.392	263.358	78.285	36.445	−300.525	−20.616	32.193	−1.294
	1400.00	37.710	294.183	265.461	82.051	40.211	−329.805	−20.735	36.259	−1.353
	1500.00	37.796	296.788	267.464	85.827	43.987	−359.355	−20.858	40.335	−1.405
	1600.00	37.874	299.230	269.374	89.610	47.770	−389.158	−20.987	44.418	−1.450
	1700.00	37.947	301.528	271.198	93.401	51.561	−419.197	−21.120	48.510	−1.491
	1800.00	38.014	303.699	272.944	97.199	55.359	−449.459	−21.259	52.610	−1.527
	1900.00	38.078	305.756	274.617	101.004	59.164	−479.933	−21.403	56.718	−1.559
	2000.00	38.139	307.711	276.223	104.815	62.975	−510.607	−21.552	60.833	−1.589

References

Phase	H / S	C_p
GAS	Ja1	Ja1

232.656

MERCURY SULFIDE (RED.) **HgS**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL−R	298.15	48.405	82.425	82.425	−53.346	0.000	−77.921	−53.346	−45.735	8.012
	300.00	48.434	82.724	82.426	−53.256	0.090	−78.074	−53.350	−45.687	7.955
	400.00	49.990	96.871	84.344	−48.335	5.011	−87.084	−55.775	−43.011	5.617
	500.00	51.547	108.193	88.018	−43.258	10.088	−97.355	−57.327	−39.660	4.143
	600.00	53.103	117.729	92.195	−38.026	15.320	−108.663	−58.385	−36.017	3.136
	618.00	53.383	119.303	92.962	−37.067	16.279	−110.797	−58.519	−35.344	2.987
			6.432		3.975					
SOL−B	618.00	53.402	125.735	92.962	−33.092	20.254	−110.797	−54.544	−35.344	2.987
	700.00	54.647	132.464	97.202	−28.662	24.684	−121.387	−113.830	−26.125	1.949
	800.00	56.166	139.860	102.080	−23.122	30.224	−135.010	−113.728	−13.602	0.888
	900.00	57.685	146.564	106.656	−17.429	35.917	−149.336	−166.321	0.056	−0.003
	1000.00	59.204	152.720	110.959	−11.585	41.761	−164.305	−164.390	18.440	−0.963
	1098.00	60.692	158.323	114.939	−5.710	47.636	−179.549	−162.358	36.262	−1.725

References

Phase	H / S	C_p	Remarks
SOL−R	Mi1	Mi1	
SOL−B	Mi1	Mi1	Mi1 DEC., MPT= 1098.

232.656

MERCURY SULFIDE (GAS) **HgS**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
GAS	298.15	36.180	254.329	254.329	127.194	0.000	51.366	127.194	83.552	−14.638
	300.00	36.195	254.553	254.330	127.261	0.067	50.895	127.167	83.281	−14.501
	400.00	36.717	265.048	255.757	130.910	3.716	24.891	123.471	68.963	−9.006
	500.00	36.960	273.270	258.467	134.595	7.401	−2.040	120.527	55.655	−5.814
	600.00	37.092	280.022	261.514	138.299	11.105	−29.714	117.939	42.932	−3.738
	700.00	37.173	285.746	264.577	142.012	14.818	−58.010	56.844	37.253	−2.780
	800.00	37.226	290.713	267.540	145.732	18.538	−86.838	55.126	34.569	−2.257
	900.00	37.263	295.100	270.364	149.457	22.263	−116.133	0.565	33.259	−1.930
	1000.00	37.289	299.028	273.037	153.185	25.991	−145.843	0.379	36.902	−1.928
	1100.00	37.310	302.583	275.564	156.915	29.721	−175.926	0.188	40.563	−1.926
	1200.00	37.326	305.830	277.953	160.646	33.452	−206.349	−0.007	44.242	−1.926
	1300.00	37.338	308.818	280.214	164.380	37.186	−237.084	−0.206	47.938	−1.926
	1400.00	37.349	311.585	282.357	168.114	40.920	−268.106	−0.410	51.649	−1.927
	1500.00	37.357	314.163	284.392	171.849	44.655	−299.395	−0.617	55.374	−1.928
	1600.00	37.365	316.574	286.329	175.585	48.391	−330.933	−0.827	59.114	−1.930
	1700.00	37.371	318.839	288.176	179.322	52.128	−362.704	−1.042	62.867	−1.932
	1800.00	37.377	320.975	289.939	183.060	55.866	−394.696	−1.260	66.632	−1.934
	1900.00	37.382	322.996	291.626	186.798	59.604	−426.896	−1.481	70.410	−1.936
	2000.00	37.387	324.914	293.243	190.536	63.342	−459.292	−1.706	74.200	−1.938

References

Phase	H / S	C_p
GAS	Mi1	Mi1

HgSO4 MERCURY SULFATE 296.654

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	102.237	140.164	140.164	−707.502	0.000	−749.292	−707.502	−594.776	104.202
	300.00	102.508	140.797	140.166	−707.313	0.189	−749.552	−707.515	−594.077	103.438
	400.00	117.152	172.293	144.362	−696.330	11.172	−765.247	−709.820	−556.128	72.623
	500.00	131.796	200.007	152.768	−683.882	23.620	−783.886	−710.120	−517.667	54.080
	600.00	146.440	225.331	162.778	−669.970	37.532	−805.169	−708.817	−479.270	41.724
	700.00	161.084	249.005	173.422	−654.594	52.908	−828.897	−764.759	−434.580	32.429
	800.00	175.728	271.470	184.285	−637.754	69.748	−854.930	−760.031	−387.720	25.316

References

Phase	H / S	C_p
SOL	Nb1/e	e

Hg2SO4 DIMERCURY SULFATE 497.244

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	131.961	200.832	200.832	−743.120	0.000	−802.998	−743.120	−625.854	109.647
	300.00	132.224	201.649	200.835	−742.876	0.244	−803.370	−743.130	−625.126	108.844
	400.00	146.442	241.635	206.191	−728.942	14.178	−825.596	−745.249	−585.683	76.482

References

Phase	H / S	C_p
SOL	St2	e

279.550

MERCURY SELENIDE **HgSe**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	53.568	100.834	100.834	−43.514	0.000	−73.578	−43.514	−38.350	6.719
	300.00	53.597	101.166	100.835	−43.415	0.099	−73.765	−43.514	−38.317	6.672
	400.00	55.145	116.797	102.956	−37.978	5.536	−84.696	−43.509	−36.587	4.778
	500.00	56.693	129.268	107.012	−32.386	11.128	−97.020	−49.454	−34.769	3.632
	600.00	58.241	139.742	111.617	−26.639	16.875	−110.484	−49.936	−31.784	2.767
	700.00	59.789	148.836	116.298	−20.738	22.776	−124.923	−109.049	−22.093	1.649
	800.00	61.337	156.921	120.880	−14.681	28.833	−140.218	−108.585	−9.700	0.633
	900.00	62.886	164.234	125.297	−8.470	35.044	−156.281	−107.967	2.625	−0.152
	1000.00	64.434	170.940	129.530	−2.104	41.410	−173.044	−107.195	14.873	−0.777
	1043.00	65.099	173.667	131.294	0.681	44.195	−180.454	−160.946	22.027	−1.103

References

Phase	H / S	C_p	Remarks
SOL	Mi1	Mi1	Mi1 DEC., MPT= 1043.

279.550

MERCURY SELENIDE (GAS) **HgSe**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	36.766	265.961	265.961	167.360	0.000	88.064	167.360	123.292	−21.600
	300.00	36.774	266.188	265.962	167.428	0.068	87.572	167.329	123.019	−21.419
	400.00	37.051	276.811	267.408	171.121	3.761	60.397	165.591	108.506	−14.169
	500.00	37.179	285.094	270.147	174.833	7.473	32.286	157.765	94.538	−9.876
	600.00	37.249	291.880	273.221	178.555	11.195	3.428	155.258	82.128	−7.150
	700.00	37.292	297.625	276.307	182.282	14.922	−26.055	93.971	76.775	−5.729
	800.00	37.319	302.607	279.290	186.013	18.653	−56.072	92.109	74.445	−4.861
	900.00	37.338	307.003	282.130	189.746	22.386	−86.557	90.249	72.349	−4.199
	1000.00	37.352	310.938	284.817	193.481	26.121	−117.457	88.390	70.460	−3.680
	1100.00	37.363	314.499	287.356	197.216	29.856	−148.732	33.221	73.711	−3.500
	1200.00	37.370	317.750	289.756	200.953	33.593	−180.347	32.811	77.410	−3.370
	1300.00	37.377	320.741	292.026	204.690	37.330	−212.273	32.414	81.143	−3.260
	1400.00	37.382	323.512	294.177	208.428	41.068	−244.488	32.030	84.906	−3.168
	1500.00	37.386	326.091	296.220	212.167	44.807	−276.969	31.658	88.696	−3.089
	1600.00	37.389	328.504	298.163	215.906	48.546	−309.700	31.299	92.510	−3.020
	1700.00	37.392	330.771	300.015	219.645	52.285	−342.665	30.953	96.346	−2.960
	1800.00	37.395	332.908	301.783	223.384	56.024	−375.850	30.621	100.203	−2.908
	1900.00	37.397	334.930	303.475	227.124	59.764	−409.243	30.301	104.077	−2.861
	2000.00	37.399	336.848	305.096	230.863	63.503	−442.833	29.994	107.968	−2.820

References

Phase	H / S	C_p
GAS	Mi1	Mi1

HgSeO3 MERCURY SELENITE 327.548

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	102.142	162.323	162.323	−365.263	0.000	−413.659	−365.263	−286.684	50.226
	300.00	102.257	162.955	162.324	−365.074	0.189	−413.960	−365.254	−286.197	49.831
	400.00	108.449	193.220	166.409	−354.539	10.724	−431.827	−364.608	−259.933	33.944
	500.00	114.642	218.085	174.327	−343.384	21.879	−452.427	−369.579	−233.782	24.423
	600.00	120.834	239.534	183.446	−331.610	33.653	−475.331	−368.773	−206.691	17.994
	633.00	122.877	246.058	186.541	−327.589	37.674	−483.344	−427.615	−197.431	16.292

References

Phase	H / S	C_p	Remarks	
SOL	Tk1	e	Tk1	TPT= 633., MPT= 738.

HgTe MERCURY TELLURIDE 328.190

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	54.798	112.968	112.968	−31.798	0.000	−65.479	−31.798	−28.093	4.922
	300.00	54.815	113.307	112.969	−31.697	0.101	−65.689	−31.796	−28.070	4.887
	400.00	55.723	129.201	115.130	−26.170	5.628	−77.850	−31.719	−26.842	3.505
	500.00	56.630	141.732	119.240	−20.552	11.246	−91.418	−31.734	−25.623	2.677
	600.00	57.538	152.137	123.880	−14.844	16.954	−106.126	−31.868	−24.390	2.123
	700.00	58.446	161.075	128.570	−9.044	22.754	−121.797	−90.916	−16.487	1.230
	800.00	59.354	168.939	133.134	−3.154	28.644	−138.305	−108.295	−3.993	0.261
	900.00	60.262	175.982	137.511	2.826	34.624	−155.558	−108.158	9.038	−0.525
	943.00	60.653	178.804	139.330	5.426	37.224	−163.186	−108.072	14.635	−0.811

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	Mi1	Mi1	MPT= 943., L= 35.6 kJ

328.190

MERCURY TELLURIDE (GAS) **HgTe**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	36.968	273.450	273.450	184.096	0.000	102.567	184.096	139.953	−24.519
	300.00	36.973	273.679	273.451	184.164	0.068	102.061	184.065	139.679	−24.320
	400.00	37.165	284.346	274.904	187.873	3.777	74.134	182.324	125.143	−16.342
	500.00	37.254	292.649	277.653	191.594	7.498	45.269	180.412	111.065	−11.603
	600.00	37.302	299.446	280.736	195.322	11.226	15.654	178.298	97.390	−8.479
	700.00	37.332	305.199	283.830	199.054	14.958	−14.585	117.183	90.725	−6.770
	800.00	37.351	310.185	286.820	202.788	18.692	−45.360	97.648	88.953	−5.808
	900.00	37.364	314.585	289.665	206.524	22.428	−76.603	95.539	87.993	−5.107
	1000.00	37.374	318.523	292.358	210.261	26.165	−108.262	93.432	87.267	−4.558
	1100.00	37.381	322.085	294.901	213.999	29.903	−140.295	91.326	86.752	−4.120
	1200.00	37.387	325.338	297.304	217.737	33.641	−172.668	89.220	86.430	−3.762
	1300.00	37.391	328.331	299.577	221.476	37.380	−205.354	87.115	86.283	−3.467
	1400.00	37.395	331.102	301.731	225.215	41.119	−238.327	38.570	88.789	−3.313
	1500.00	37.398	333.682	303.776	228.955	44.859	−271.568	38.040	92.394	−3.217
	1600.00	37.400	336.096	305.721	232.695	48.599	−305.058	37.517	96.035	−3.135
	1700.00	37.403	338.363	307.575	236.435	52.339	−338.782	37.000	99.708	−3.064
	1800.00	37.405	340.501	309.346	240.175	56.079	−372.726	36.487	103.412	−3.001
	1900.00	37.406	342.523	311.039	243.916	59.820	−406.878	35.983	107.144	−2.946
	2000.00	37.408	344.442	312.662	247.657	63.561	−441.227	35.491	110.902	−2.896

References

Phase	H / S	C_p
GAS	Mi1	Mi1

Ho HOLMIUM 164.930

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL−A	298.15	27.159	75.019	75.019	0.000	0.000	−22.367	0.000	0.000	0.000
	300.00	27.154	75.187	75.020	0.050	0.050	−22.506	0.000	0.000	0.000
	400.00	27.822	83.073	76.090	2.793	2.793	−30.436	0.000	0.000	0.000
	500.00	28.222	89.335	78.135	5.600	5.600	−39.067	0.000	0.000	0.000
	600.00	28.272	94.487	80.444	8.426	8.426	−48.266	0.000	0.000	0.000
	700.00	28.451	98.854	82.769	11.259	11.259	−57.939	0.000	0.000	0.000
	800.00	29.097	102.689	85.024	14.132	14.132	−68.019	0.000	0.000	0.000
	900.00	30.416	106.185	87.184	17.101	17.101	−78.465	0.000	0.000	0.000
	1000.00	31.852	109.458	89.249	20.209	20.209	−89.249	0.000	0.000	0.000
	1100.00	33.735	112.580	91.229	23.486	23.486	−100.352	0.000	0.000	0.000
	1200.00	35.930	115.607	93.135	26.966	26.966	−111.762	0.000	0.000	0.000
	1300.00	38.472	118.581	94.978	30.683	30.683	−123.471	0.000	0.000	0.000
	1400.00	41.398	121.536	96.769	34.674	34.674	−135.477	0.000	0.000	0.000
	1500.00	44.698	124.503	98.519	38.976	38.976	−147.779	0.000	0.000	0.000
	1600.00	48.303	127.501	100.237	43.623	43.623	−160.379	0.000	0.000	0.000
	1700.00	52.089	130.543	101.930	48.642	48.642	−173.281	0.000	0.000	0.000
	1701.00	52.127	130.574	101.947	48.694	48.694	−173.411	0.000	0.000	0.000
			2.757		4.690					
SOL−B	1701.00	28.033	133.331	101.947	53.384	53.384	−173.411	0.000	0.000	0.000
	1743.00	28.033	134.014	102.711	54.562	54.562	−179.026	0.000	0.000	0.000
			6.988		12.180					
LIQ	1743.00	43.932	141.002	102.711	66.742	66.742	−179.026	0.000	0.000	0.000
	1800.00	43.932	142.416	103.946	69.246	69.246	−187.103	0.000	0.000	0.000
	1900.00	43.932	144.791	106.034	73.639	73.639	−201.465	0.000	0.000	0.000
	2000.00	43.932	147.045	108.029	78.032	78.032	−216.057	0.000	0.000	0.000
	2100.00	43.932	149.188	109.938	82.425	82.425	−230.870	0.000	0.000	0.000
	2200.00	43.932	151.232	111.769	86.819	86.819	−245.892	0.000	0.000	0.000
	2300.00	43.932	153.185	113.528	91.212	91.212	−261.113	0.000	0.000	0.000
	2400.00	43.932	155.055	115.219	95.605	95.605	−276.526	0.000	0.000	0.000
	2500.00	43.932	156.848	116.849	99.998	99.998	−292.122	0.000	0.000	0.000
	2600.00	43.932	158.571	118.420	104.391	104.391	−307.893	0.000	0.000	0.000
	2700.00	43.932	160.229	119.938	108.785	108.785	−323.834	0.000	0.000	0.000
	2800.00	43.932	161.827	121.406	113.178	113.178	−339.937	0.000	0.000	0.000
	2900.00	43.932	163.368	122.827	117.571	117.571	−356.197	0.000	0.000	0.000
	2964.00	43.932	164.327	123.712	120.383	120.383	−366.684	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks	
SOL−A	Hu1	Hu1		
SOL−B	Hu1	Hu1		
LIQ	Hu1	Hu1	Hu1	BPT= 2964., L= 242.50 kJ

164.930

HOLMIUM (GAS) **Ho**[g]

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	20.786	195.578	195.578	300.830	0.000	242.519	300.830	264.885	−46.407
	300.00	20.786	195.706	195.578	300.868	0.038	242.157	300.818	264.662	−46.082
	400.00	20.786	201.686	196.393	302.947	2.117	222.273	300.154	252.709	−33.000
	500.00	20.786	206.324	197.933	305.026	4.196	201.864	299.425	240.931	−25.170
	600.00	20.822	210.119	199.657	307.107	6.277	181.036	298.681	229.302	−19.963
	700.00	20.808	213.328	201.387	309.189	8.359	159.859	297.929	217.798	−16.252
	800.00	20.818	216.106	203.057	311.270	10.440	138.384	297.138	206.404	−13.477
	900.00	20.872	218.561	204.646	313.354	12.524	116.649	296.253	195.114	−11.324
	1000.00	20.970	220.765	206.149	315.445	14.615	94.681	295.236	183.929	−9.607
	1100.00	21.110	222.770	207.571	317.549	16.719	72.502	294.063	172.854	−8.208
	1200.00	21.287	224.614	208.915	319.669	18.839	50.132	292.702	161.894	−7.047
	1300.00	21.496	226.326	210.189	321.808	20.978	27.584	291.124	151.055	−6.069
	1400.00	21.733	227.927	211.400	323.969	23.139	4.870	289.295	140.348	−5.236
	1500.00	21.993	229.436	212.552	326.155	25.325	−17.998	287.179	129.780	−4.519
	1600.00	22.272	230.864	213.653	328.368	27.538	−41.014	284.745	119.365	−3.897
	1700.00	22.565	232.223	214.705	330.610	29.780	−64.169	281.968	109.112	−3.353
	1800.00	22.869	233.521	215.715	332.881	32.051	−87.457	263.636	99.647	−2.892
	1900.00	23.180	234.766	216.685	335.184	34.354	−110.871	261.545	90.593	−2.491
	2000.00	23.493	235.963	217.619	337.518	36.688	−134.408	259.485	81.649	−2.132
	2100.00	23.806	237.117	218.520	339.883	39.053	−158.063	257.457	72.807	−1.811
	2200.00	24.114	238.231	219.391	342.279	41.449	−181.830	255.460	64.062	−1.521
	2300.00	24.414	239.310	220.234	344.705	43.875	−205.708	253.493	55.406	−1.258
	2400.00	24.702	240.355	221.050	347.161	46.331	−229.691	251.556	46.835	−1.019
	2500.00	24.974	241.369	221.843	349.645	48.815	−253.778	249.647	38.344	−0.801
	2600.00	25.228	242.353	222.613	352.155	51.325	−277.964	247.764	29.929	−0.601
	2700.00	25.459	243.310	223.362	354.690	53.860	−302.247	245.905	21.586	−0.418
	2800.00	25.664	244.240	224.091	357.246	56.416	−326.625	244.068	13.312	−0.248
	2900.00	25.839	245.143	224.802	359.821	58.991	−351.094	242.250	5.103	−0.092
	3000.00	25.981	246.022	225.494	362.413	61.583	−375.653	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1

HoBr3 HOLMIUM BROMIDE 404.642

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	98.753	194.138	194.138	−840.984	0.000	−898.866	−840.984	−808.427	141.633
	300.00	98.837	194.749	194.139	−840.801	0.183	−899.226	−841.061	−808.225	140.724
	400.00	102.143	223.682	198.062	−830.736	10.248	−920.209	−885.462	−788.048	102.909
	500.00	104.213	246.711	205.567	−820.412	20.572	−943.767	−883.484	−763.921	79.806
	600.00	105.798	265.856	214.064	−809.909	31.075	−969.422	−881.384	−740.203	64.440
	700.00	107.152	282.268	222.663	−799.260	41.724	−996.848	−879.171	−716.847	53.492
	800.00	108.384	296.658	231.031	−788.483	52.501	−1025.809	−876.888	−693.813	45.301
	900.00	109.545	309.491	239.049	−777.586	63.398	−1056.128	−874.596	−671.067	38.948
	1000.00	110.662	321.091	246.682	−766.575	74.409	−1087.666	−872.342	−648.574	33.878
	1100.00	111.750	331.690	253.935	−755.454	85.530	−1120.313	−870.157	−626.303	29.741
	1192.00	112.734	340.705	260.288	−745.128	95.856	−1151.248	−868.240	−605.987	26.555
			42.015		50.082					
LIQ	1192.00	143.930	382.720	260.288	−695.046	145.938	−1151.248	−818.158	−605.987	26.555
	1200.00	143.930	383.683	261.108	−693.894	147.090	−1154.313	−817.747	−604.565	26.316
	1300.00	143.930	395.203	270.986	−679.501	161.483	−1193.265	−812.750	−587.004	23.586

References

Phase	H / S	C_p
SOL	Pa2	Pa2
LIQ	Pa2	Pa2

404.642

HOLMIUM BROMIDE (GAS) **HoBr3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	79.866	404.096	404.096	−548.522	0.000	−669.003	−548.522	−578.564	101.362
	300.00	79.899	404.590	404.097	−548.374	0.148	−669.751	−548.634	−578.750	100.769
	400.00	81.121	427.764	407.249	−540.316	8.206	−711.421	−595.042	−579.261	75.644
	500.00	81.777	445.942	413.235	−532.168	16.354	−755.139	−595.240	−575.293	60.100
	600.00	82.211	460.893	419.968	−523.968	24.554	−800.503	−595.442	−571.284	49.735
	700.00	82.541	473.591	426.745	−515.729	32.793	−847.243	−595.640	−567.242	42.328
	800.00	82.814	484.631	433.305	−507.461	41.061	−895.166	−595.866	−563.171	36.771
	900.00	83.055	494.400	439.561	−499.168	49.354	−944.127	−596.178	−559.066	32.447
	1000.00	83.275	503.162	445.491	−490.851	57.671	−994.013	−596.618	−554.920	28.986
	1100.00	83.483	511.109	451.100	−482.513	66.009	−1044.732	−597.216	−550.723	26.152
	1200.00	83.681	518.381	456.408	−474.155	74.367	−1096.212	−598.008	−546.463	23.787
	1300.00	83.873	525.087	461.437	−465.777	82.745	−1148.390	−599.025	−542.128	21.783
	1400.00	84.061	531.309	466.208	−457.380	91.142	−1201.213	−600.306	−537.705	20.062
	1500.00	84.245	537.115	470.744	−448.965	99.557	−1254.638	−601.888	−533.180	18.567
	1600.00	84.426	542.558	475.064	−440.531	107.991	−1308.624	−603.806	−528.539	17.255
	1700.00	84.606	547.682	479.186	−432.080	116.442	−1363.139	−606.085	−523.767	16.093
	1800.00	84.784	552.523	483.127	−423.610	124.912	−1418.151	−623.939	−518.236	15.039
	1900.00	84.961	557.112	486.902	−415.123	133.399	−1473.635	−625.572	−512.319	14.085
	2000.00	85.136	561.474	490.522	−406.618	141.904	−1529.566	−627.195	−506.316	13.224

References

Phase	H / S	C_p
GAS	Pa2	Pa2

HoCl3 HOLMIUM CHLORIDE 271.288

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	96.222	153.971	153.971	–1005.415	0.000	–1051.322	–1005.415	–929.171	162.787
	300.00	96.328	154.567	153.973	–1005.237	0.178	–1051.607	–1005.381	–928.698	161.701
	400.00	100.226	182.883	157.807	–995.385	10.030	–1068.538	–1003.473	–903.422	117.975
	500.00	102.276	205.488	165.159	–985.251	20.164	–1087.995	–1001.502	–878.636	91.790
	600.00	103.600	224.259	173.489	–974.953	30.462	–1109.509	–999.483	–854.252	74.369
	700.00	104.579	240.306	181.916	–964.542	40.873	–1132.756	–997.421	–830.209	61.951
	800.00	105.376	254.324	190.109	–954.043	51.372	–1157.502	–995.352	–806.463	52.657
	900.00	106.067	266.776	197.949	–943.470	61.945	–1183.569	–993.337	–782.974	45.443
	993.00	106.649	277.235	204.892	–933.579	71.836	–1208.873	–991.549	–761.326	40.048
			30.864		30.648					
LIQ	993.00	143.511	308.099	204.892	–902.931	102.484	–1208.873	–960.901	–761.326	40.048
	1000.00	143.511	309.107	205.618	–901.926	103.489	–1211.033	–960.513	–759.921	39.694
	1100.00	143.511	322.785	215.658	–887.575	117.840	–1242.639	–955.069	–740.127	35.146
	1200.00	143.511	335.272	225.113	–873.224	132.191	–1275.551	–949.844	–720.819	31.376
	1300.00	143.511	346.759	234.035	–858.873	146.542	–1309.660	–944.869	–701.937	28.204

References

Phase	H / S	C_p
SOL	Nb1/Pa2	Dw4,Pa2
LIQ	Dw4	Dw4,Pa2

271.288 HOLMIUM CHLORIDE (GAS) **HoCl3[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	78.169	377.364	377.364	−682.410	0.000	−794.921	−682.410	−672.771	117.867
	300.00	78.222	377.848	377.365	−682.265	0.145	−795.620	−682.410	−672.711	117.129
	400.00	80.139	400.649	380.461	−674.335	8.075	−834.595	−682.423	−669.478	87.425
	500.00	81.120	418.647	386.362	−666.267	16.143	−875.591	−682.519	−666.232	69.601
	600.00	81.733	433.495	393.016	−658.123	24.287	−918.220	−682.653	−662.963	57.716
	700.00	82.171	446.129	399.724	−649.927	32.483	−962.217	−682.805	−659.669	49.225
	800.00	82.516	457.124	406.226	−641.692	40.718	−1007.391	−683.001	−656.352	42.855
	900.00	82.808	466.861	412.433	−633.425	48.985	−1053.600	−683.292	−653.004	37.899
	1000.00	83.066	475.599	418.320	−625.131	57.279	−1100.730	−683.718	−649.618	33.933
	1100.00	83.302	483.527	423.893	−616.813	65.597	−1148.692	−684.306	−646.181	30.685
	1200.00	83.524	490.785	429.169	−608.471	73.939	−1197.413	−685.091	−642.682	27.975
	1300.00	83.735	497.479	434.170	−600.108	82.302	−1246.831	−686.105	−639.108	25.680
	1400.00	83.938	503.692	438.916	−591.724	90.686	−1296.893	−687.383	−635.447	23.709
	1500.00	84.136	509.490	443.430	−583.321	99.089	−1347.555	−688.964	−631.684	21.997
	1600.00	84.329	514.926	447.730	−574.897	107.513	−1398.779	−690.883	−627.804	20.496
	1700.00	84.519	520.044	451.835	−566.455	115.955	−1450.530	−693.164	−623.794	19.167
	1800.00	84.707	524.880	455.760	−557.994	124.416	−1502.778	−711.022	−619.024	17.964
	1900.00	84.892	529.465	459.520	−549.514	132.896	−1555.497	−712.661	−613.869	16.876
	2000.00	85.076	533.824	463.127	−541.015	141.395	−1608.664	−714.294	−608.627	15.896

References

Phase	H / S	C_p
GAS	Pa2	Pa2

379.380 HOLMIUM CHLORIDE HEXAHYDRATE **HoCl3*6H2O**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	347.295	406.183	406.183	−2878.174	0.000	−2999.277	−2878.174	−2459.860	430.957
	300.00	347.332	408.331	406.189	−2877.531	0.643	−3000.031	−2878.159	−2457.264	427.848
	400.00	349.097	508.504	419.835	−2842.707	35.467	−3046.108	−2877.627	−2317.060	302.577
	500.00	350.611	586.568	445.660	−2807.720	70.454	−3101.004	−2877.517	−2176.939	227.423
	600.00	352.025	650.618	474.641	−2772.588	105.586	−3162.958	−2877.715	−2036.809	177.320

References

Phase	H / S	C_p
SOL	Nb1	Nb1,e

HoF3 HOLMIUM FLUORIDE 221.926

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	91.202	118.826	118.826	−1697.867	0.000	−1733.295	−1697.867	−1620.233	283.858
	300.00	91.341	119.390	118.827	−1697.698	0.169	−1733.515	−1697.835	−1619.751	282.024
	400.00	96.431	146.457	122.483	−1688.278	9.589	−1746.860	−1695.978	−1593.998	208.155
	500.00	99.114	168.289	129.532	−1678.489	19.378	−1762.633	−1694.041	−1568.727	163.884
	600.00	100.850	186.522	137.553	−1668.485	29.382	−1780.399	−1692.073	−1543.848	134.404
	700.00	102.138	202.169	145.692	−1658.333	39.534	−1799.852	−1690.080	−1519.301	113.372
	800.00	103.188	215.878	153.626	−1648.066	49.801	−1820.768	−1688.093	−1495.040	97.616
	900.00	104.100	228.086	161.234	−1637.700	60.167	−1842.977	−1686.169	−1471.025	85.376
	1000.00	104.925	239.097	168.478	−1627.249	70.618	−1866.345	−1684.346	−1447.219	75.595
	1100.00	105.694	249.134	175.361	−1616.717	81.150	−1890.764	−1682.651	−1423.590	67.601
	1200.00	106.425	258.362	181.899	−1606.111	91.756	−1916.145	−1681.117	−1400.108	60.945
	1300.00	107.129	266.908	188.113	−1595.433	102.434	−1942.414	−1679.776	−1376.746	55.318
	1343.00	107.425	270.399	190.692	−1590.820	107.047	−1953.967	−1679.268	−1366.731	53.158
			0.000		0.000					
SOL−B	1343.00	126.189	270.399	190.692	−1590.820	107.047	−1953.967	−1679.268	−1366.731	53.158
	1400.00	126.189	275.645	194.045	−1583.627	114.240	−1969.530	−1677.605	−1353.502	50.500
	1416.00	126.189	277.079	194.975	−1581.608	116.259	−1973.952	−1677.157	−1349.800	49.793
			39.772		56.317					
LIQ	1416.00	96.013	316.850	194.975	−1525.291	172.576	−1973.952	−1620.840	−1349.800	49.793
	1500.00	96.007	322.383	201.956	−1517.227	180.640	−2000.802	−1621.172	−1333.713	46.444
	1600.00	96.004	328.579	209.679	−1507.626	190.241	−2033.353	−1621.904	−1314.527	42.915
	1700.00	96.005	334.400	216.846	−1498.026	199.841	−2066.505	−1623.024	−1295.284	39.799
	1800.00	96.008	339.887	223.531	−1488.425	209.442	−2100.222	−1639.746	−1275.349	37.010

References

Phase	H / S	C_p
SOL−A	Pa2	Pa2
SOL−B	S3	S3
LIQ	S3	S3

221.926

HOLMIUM FLUORIDE (GAS) **HoF3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	71.197	342.260	342.260	−1242.648	0.000	−1344.693	−1242.648	−1231.631	215.777
	300.00	71.321	342.701	342.262	−1242.516	0.132	−1345.326	−1242.653	−1231.563	214.434
	400.00	75.756	363.912	345.123	−1235.133	7.515	−1380.697	−1242.833	−1227.835	160.339
	500.00	77.958	381.077	350.653	−1227.436	15.212	−1417.975	−1242.989	−1224.068	127.878
	600.00	79.281	395.416	356.952	−1219.570	23.078	−1456.819	−1243.157	−1220.268	106.234
	700.00	80.189	407.709	363.345	−1211.594	31.054	−1496.990	−1243.340	−1216.439	90.772
	800.00	80.876	418.463	369.577	−1203.539	39.109	−1538.310	−1243.567	−1212.582	79.173
	900.00	81.434	428.022	375.550	−1195.423	47.225	−1580.643	−1243.891	−1208.691	70.151
	1000.00	81.913	436.628	381.234	−1187.255	55.393	−1623.882	−1244.352	−1204.756	62.930
	1100.00	82.339	444.455	386.631	−1179.042	63.606	−1667.942	−1244.975	−1200.768	57.020
	1200.00	82.730	451.636	391.753	−1170.788	71.860	−1712.752	−1245.794	−1196.714	52.092
	1300.00	83.095	458.273	396.618	−1162.497	80.151	−1758.252	−1246.840	−1192.584	47.919
	1400.00	83.443	464.444	401.245	−1154.170	88.478	−1804.391	−1248.147	−1188.363	44.338
	1500.00	83.777	470.212	405.653	−1145.809	96.839	−1851.127	−1249.754	−1184.038	41.232
	1600.00	84.101	475.629	409.859	−1137.415	105.233	−1898.422	−1251.692	−1179.596	38.510
	1700.00	84.417	480.737	413.879	−1128.989	113.659	−1946.242	−1253.988	−1175.021	36.104
	1800.00	84.726	485.571	417.729	−1120.532	122.116	−1994.560	−1271.853	−1169.687	33.943
	1900.00	85.031	490.161	421.421	−1112.044	130.604	−2043.349	−1273.492	−1163.966	32.000
	2000.00	85.332	494.530	424.968	−1103.525	139.123	−2092.585	−1275.116	−1158.160	30.248

References

Phase	H / S	C_p
GAS	Pa2	Pa2

377.859

HOLMIUM OXIDE **Ho2O3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	114.975	158.197	158.197	−1880.708	0.000	−1927.874	−1880.708	−1791.394	313.845
	300.00	115.154	158.909	158.199	−1880.495	0.213	−1928.168	−1880.677	−1790.840	311.813
	400.00	121.644	193.048	162.810	−1868.613	12.095	−1945.832	−1878.738	−1761.175	229.986
	500.00	124.948	220.581	171.701	−1856.268	24.440	−1966.558	−1876.595	−1732.031	180.944
	600.00	126.997	243.555	181.815	−1843.664	37.044	−1989.797	−1874.382	−1703.325	148.288
	700.00	128.453	263.246	192.075	−1830.888	49.820	−2015.160	−1872.154	−1674.992	124.989
	800.00	129.594	280.476	202.070	−1817.984	62.724	−2042.364	−1870.000	−1646.974	107.536
	900.00	130.552	295.797	211.649	−1804.975	75.733	−2071.192	−1868.039	−1619.216	93.977
	1000.00	131.396	309.596	220.765	−1791.877	88.831	−2101.473	−1866.350	−1591.663	83.140
	1100.00	132.165	322.156	229.420	−1778.699	102.009	−2133.070	−1864.988	−1564.263	74.281
	1200.00	132.883	333.687	237.635	−1765.446	115.262	−2165.870	−1864.020	−1536.970	66.903
	1300.00	133.566	344.350	245.439	−1752.123	128.585	−2199.779	−1863.506	−1509.740	60.662
	1400.00	134.223	354.273	252.862	−1738.733	141.975	−2234.715	−1863.517	−1482.531	55.314
	1500.00	134.860	363.555	259.936	−1725.279	155.429	−2270.612	−1864.128	−1455.300	50.678

References

Phase	H / S	C_p
SOL	Nb1	Pa3

I[g] IODINE (GAS) 126.904

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	20.786	180.786	180.786	106.760	0.000	52.859	106.760	70.173	−12.294
	300.00	20.786	180.915	180.786	106.798	0.038	52.524	106.748	69.946	−12.179
	400.00	20.786	186.894	181.602	108.877	2.117	34.119	98.007	58.062	−7.582
	500.00	20.786	191.533	183.141	110.956	4.196	15.189	75.989	50.201	−5.244
	600.00	20.786	195.322	184.865	113.034	6.274	−4.159	76.192	45.025	−3.920
	700.00	20.786	198.527	186.594	115.113	8.353	−23.856	76.389	39.814	−2.971
	800.00	20.786	201.302	188.263	117.192	10.432	−43.850	76.582	34.576	−2.258
	900.00	20.786	203.751	189.850	119.271	12.511	−64.105	76.771	29.314	−1.701
	1000.00	20.783	205.941	191.352	121.349	14.589	−84.592	76.955	24.031	−1.255
	1100.00	20.793	207.922	192.770	123.428	16.668	−105.287	77.137	18.730	−0.889
	1200.00	20.816	209.732	194.109	125.508	18.748	−126.171	77.316	13.412	−0.584
	1300.00	20.851	211.400	195.376	127.591	20.831	−147.228	77.496	8.080	−0.325
	1400.00	20.896	212.946	196.576	129.679	22.919	−168.446	77.676	2.733	−0.102
	1500.00	20.950	214.390	197.716	131.771	25.011	−189.814	77.858	−2.626	0.091
	1600.00	21.012	215.744	198.801	133.869	27.109	−211.321	78.043	−7.998	0.261
	1700.00	21.080	217.020	199.835	135.973	29.213	−232.960	78.232	−13.381	0.411
	1800.00	21.152	218.227	200.824	138.085	31.325	−254.723	78.424	−18.776	0.545
	1900.00	21.229	219.372	201.770	140.204	33.444	−276.604	78.622	−24.181	0.665
	2000.00	21.310	220.463	202.678	142.331	35.571	−298.596	78.824	−29.597	0.773
	2100.00	21.394	221.505	203.550	144.466	37.706	−320.695	79.031	−35.023	0.871
	2200.00	21.480	222.502	204.389	146.610	39.850	−342.895	79.244	−40.459	0.961
	2300.00	21.569	223.459	205.197	148.762	42.002	−365.194	79.463	−45.905	1.043
	2400.00	21.660	224.379	205.977	150.924	44.164	−387.586	79.688	−51.361	1.118
	2500.00	21.752	225.265	206.731	153.094	46.334	−410.068	79.919	−56.826	1.187
	2600.00	21.846	226.120	207.461	155.274	48.514	−432.638	80.156	−62.300	1.252
	2700.00	21.941	226.946	208.167	157.463	50.703	−455.291	80.400	−67.784	1.311
	2800.00	22.037	227.746	208.852	159.662	52.902	−478.026	80.651	−73.277	1.367
	2900.00	22.134	228.521	209.517	161.871	55.111	−500.840	80.909	−78.779	1.419
	3000.00	22.232	229.273	210.163	164.089	57.329	−523.730	81.173	−84.290	1.468

References

Phase	H / S	C_p
GAS	Ja2	Ja1

253.809 **IODINE** **I2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	54.437	116.142	116.142	0.000	0.000	−34.628	0.000	0.000	0.000
	300.00	54.507	116.479	116.143	0.101	0.101	−34.843	0.000	0.000	0.000
	386.75	63.546	131.224	117.899	5.153	5.153	−45.597	0.000	0.000	0.000
			40.122		15.517					
LIQ	386.75	80.672	171.345	117.899	20.670	20.670	−45.597	0.000	0.000	0.000
	400.00	80.672	174.063	119.714	21.739	21.739	−47.886	0.000	0.000	0.000
	457.67	80.672	184.927	127.262	26.391	26.391	−58.244	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks
SOL	Ja2	Ja1	
LIQ	Ja2	Ja1	Ja2 BPT= 457.666, L= 41.96 kJ

253.809 **IODINE (GAS)** **I2[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	36.878	260.685	260.685	62.421	0.000	−15.302	62.421	19.326	−3.386
	300.00	36.888	260.913	260.686	62.489	0.068	−15.785	62.388	19.058	−3.318
	400.00	37.246	271.580	262.138	66.198	3.777	−42.434	44.459	5.452	−0.712
	500.00	37.442	279.914	264.890	69.933	7.512	−70.024	0.000	0.000	0.000
	600.00	37.574	286.753	267.981	73.684	11.263	−98.367	0.000	0.000	0.000
	700.00	37.677	292.553	271.087	77.447	15.026	−127.340	0.000	0.000	0.000
	800.00	37.763	297.590	274.092	81.219	18.798	−156.853	0.000	0.000	0.000
	900.00	37.841	302.042	276.955	84.999	22.578	−186.839	0.000	0.000	0.000
	1000.00	37.912	306.033	279.667	88.787	26.366	−217.246	0.000	0.000	0.000
	1100.00	37.980	309.650	282.231	92.582	30.161	−248.033	0.000	0.000	0.000
	1200.00	38.045	312.957	284.655	96.383	33.962	−279.165	0.000	0.000	0.000
	1300.00	38.108	316.005	286.951	100.191	37.770	−310.616	0.000	0.000	0.000
	1400.00	38.170	318.831	289.129	104.005	41.584	−342.359	0.000	0.000	0.000
	1500.00	38.231	321.467	291.198	107.825	45.404	−374.375	0.000	0.000	0.000
	1600.00	38.291	323.936	293.167	111.651	49.230	−406.647	0.000	0.000	0.000
	1700.00	38.351	326.259	295.046	115.483	53.062	−439.158	0.000	0.000	0.000
	1800.00	38.410	328.453	296.842	119.321	56.900	−471.894	0.000	0.000	0.000
	1900.00	38.469	330.531	298.561	123.165	60.744	−504.844	0.000	0.000	0.000
	2000.00	38.528	332.506	300.209	127.015	64.594	−537.997	0.000	0.000	0.000
	2100.00	38.586	334.387	301.792	130.870	68.449	−571.343	0.000	0.000	0.000
	2200.00	38.644	336.183	303.315	134.732	72.311	−604.872	0.000	0.000	0.000
	2300.00	38.702	337.903	304.782	138.599	76.178	−638.577	0.000	0.000	0.000
	2400.00	38.760	339.551	306.196	142.472	80.051	−672.450	0.000	0.000	0.000
	2500.00	38.818	341.134	307.562	146.351	83.930	−706.485	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Ja2	Ja1

In

INDIUM

114.820

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	26.728	57.823	57.823	0.000	0.000	−17.240	0.000	0.000	0.000
	300.00	26.715	57.988	57.823	0.049	0.049	−17.347	0.000	0.000	0.000
	400.00	28.971	65.870	58.883	2.795	2.795	−23.553	0.000	0.000	0.000
	429.76	30.331	67.996	59.441	3.677	3.677	−25.545	0.000	0.000	0.000
			7.595		3.264					
LIQ	429.76	29.483	75.591	59.441	6.941	6.941	−25.545	0.000	0.000	0.000
	500.00	29.422	80.049	62.031	9.009	9.009	−31.015	0.000	0.000	0.000
	600.00	29.335	85.406	65.494	11.947	11.947	−39.296	0.000	0.000	0.000
	700.00	29.248	89.921	68.670	14.876	14.876	−48.069	0.000	0.000	0.000
	800.00	29.161	93.821	71.575	17.797	17.797	−57.260	0.000	0.000	0.000
	900.00	29.074	97.251	74.242	20.708	20.708	−66.817	0.000	0.000	0.000
	1000.00	29.079	100.315	76.698	23.616	23.616	−76.698	0.000	0.000	0.000
	1100.00	29.079	103.086	78.973	26.524	26.524	−86.871	0.000	0.000	0.000
	1200.00	29.079	105.616	81.090	29.432	29.432	−97.308	0.000	0.000	0.000
	1300.00	29.079	107.944	83.067	32.340	32.340	−107.987	0.000	0.000	0.000
	1400.00	29.079	110.099	84.922	35.248	35.248	−118.891	0.000	0.000	0.000
	1500.00	29.079	112.105	86.668	38.156	38.156	−130.002	0.000	0.000	0.000
	1600.00	29.079	113.982	88.317	41.064	41.064	−141.307	0.000	0.000	0.000
	1700.00	29.079	115.745	89.879	43.971	43.971	−152.795	0.000	0.000	0.000
	1800.00	29.079	117.407	91.363	46.879	46.879	−164.453	0.000	0.000	0.000
	1900.00	29.079	118.979	92.775	49.787	49.787	−176.273	0.000	0.000	0.000
	2000.00	29.079	120.471	94.123	52.695	52.695	−188.246	0.000	0.000	0.000
	2100.00	29.079	121.889	95.412	55.603	55.603	−200.365	0.000	0.000	0.000
	2200.00	29.079	123.242	96.646	58.511	58.511	−212.622	0.000	0.000	0.000
	2300.00	29.079	124.535	97.831	61.419	61.419	−225.011	0.000	0.000	0.000
	2343.00	29.079	125.073	98.326	62.669	62.669	−230.378	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks	
SOL	Hu1	Hu1	Hu1	MPT= 629.76
LIQ	Hu1	Hu1	Hu1	BPT= 2343., L= 231.45 kJ

114.820

INDIUM (GAS)

In[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	20.831	173.775	173.775	242.672	0.000	190.861	242.672	208.101	−36.458
	300.00	20.841	173.904	173.775	242.711	0.039	190.539	242.661	207.886	−36.196
	400.00	21.188	179.944	174.597	244.811	2.139	172.833	242.016	196.387	−25.645
	500.00	21.970	184.747	176.161	246.965	4.293	154.591	237.955	185.607	−19.390
	600.00	23.088	188.848	177.941	249.216	6.544	135.907	237.269	175.204	−15.253
	700.00	24.271	192.496	179.765	251.584	8.912	116.837	236.708	164.906	−12.305
	800.00	25.343	195.809	181.566	254.066	11.394	97.419	236.270	154.679	−10.100
	900.00	26.198	198.846	183.320	256.646	13.974	77.684	235.937	144.501	−8.387
	1000.00	26.771	201.639	185.014	259.297	16.625	57.658	235.680	134.356	−7.018
	1100.00	27.023	204.205	186.644	261.989	19.317	37.364	235.465	124.234	−5.899
	1200.00	27.118	206.562	188.207	264.698	22.026	16.824	235.266	114.131	−4.968
	1300.00	27.040	208.730	189.703	267.407	24.735	−3.942	235.067	104.045	−4.181
	1400.00	26.857	210.728	191.135	270.102	27.430	−24.916	234.855	93.974	−3.506
	1500.00	26.610	212.573	192.503	272.776	30.104	−46.083	234.620	83.919	−2.922
	1600.00	26.326	214.281	193.811	275.423	32.751	−67.426	234.360	73.881	−2.412
	1700.00	26.024	215.868	195.063	278.041	35.369	−88.935	234.069	63.860	−1.962
	1800.00	25.716	217.347	196.260	280.628	37.956	−110.596	233.748	53.857	−1.563
	1900.00	25.410	218.729	197.407	283.184	40.512	−132.401	233.397	43.872	−1.206
	2000.00	25.113	220.025	198.506	285.710	43.038	−154.339	233.015	33.907	−0.886
	2100.00	24.829	221.243	199.560	288.207	45.535	−176.403	232.604	23.961	−0.596
	2200.00	24.562	222.392	200.572	290.676	48.004	−198.586	232.166	14.036	−0.333
	2300.00	24.315	223.478	201.544	293.120	50.448	−220.880	231.701	4.132	−0.094
	2400.00	24.088	224.508	202.480	295.540	52.868	−243.279	0.000	0.000	0.000
	2500.00	23.885	225.487	203.381	297.939	55.267	−265.779	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1

InAs

INDIUM ARSENIDE

189.742

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	47.780	75.701	75.701	−58.601	0.000	−81.171	−58.601	−53.286	9.335
	300.00	47.794	75.997	75.702	−58.513	0.088	−81.312	−58.608	−53.253	9.272
	400.00	48.547	89.849	77.586	−53.696	4.905	−89.635	−59.042	−51.408	6.713
	500.00	49.300	100.763	81.168	−48.803	9.798	−99.185	−62.931	−48.893	5.108
	600.00	50.053	109.818	85.209	−43.836	14.765	−109.726	−63.524	−46.029	4.007
	700.00	50.806	117.590	89.293	−38.793	19.808	−121.106	−64.088	−43.069	3.214
	800.00	51.559	124.424	93.265	−33.674	24.927	−133.213	−64.622	−40.029	2.614
	900.00	52.313	130.540	97.073	−28.481	30.120	−145.967	−65.123	−36.925	2.143
	1000.00	53.066	136.091	100.702	−23.212	35.389	−159.303	−65.572	−33.767	1.764
	1100.00	53.819	141.184	104.153	−17.868	40.733	−173.170	−65.972	−30.567	1.451
	1200.00	54.572	145.899	107.438	−12.448	46.153	−187.527	−66.412	−27.330	1.190
	1215.00	54.685	146.578	107.917	−11.629	46.972	−189.720	−66.490	−26.841	1.154
			63.363		76.986					
LIQ	1215.00	59.831	209.941	107.917	65.357	123.958	−189.720	−10.496	−26.841	1.154
	1300.00	59.831	213.986	114.722	70.443	129.044	−207.739	10.334	−29.449	1.183
	1400.00	59.831	218.420	121.972	76.426	135.027	−229.362	9.632	−32.487	1.212
	1500.00	59.831	222.548	128.541	82.409	141.010	−251.413	−88.410	−29.021	1.011
	1600.00	59.831	226.410	134.539	88.392	146.993	−273.863	−87.202	−25.101	0.819
	1700.00	59.831	230.037	140.051	94.376	152.977	−296.687	−85.996	−21.256	0.653
	1800.00	59.831	233.457	145.146	100.359	158.960	−319.863	−84.790	−17.483	0.507

References

Phase	H / S	C_p
SOL	Nb1	Nb1,e
LIQ	Tk1	e

InAsO4

INDIUM ARSENATE

253.739

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	119.320	154.850	154.850	−978.303	0.000	−1024.471	−978.303	−874.257	153.166
	300.00	119.637	155.589	154.852	−978.082	0.221	−1024.759	−978.286	−873.611	152.109
	400.00	132.021	191.884	159.717	−965.436	12.867	−1042.190	−976.834	−838.917	109.551
	500.00	139.674	222.216	169.268	−951.829	26.474	−1062.937	−978.126	−804.121	84.006
	600.00	145.466	248.212	180.310	−937.562	40.741	−1086.489	−975.738	−769.539	66.994
	700.00	150.379	271.013	191.672	−922.764	55.539	−1112.473	−973.057	−735.381	54.875
	800.00	154.822	291.387	202.885	−907.501	70.802	−1140.611	−970.120	−701.625	45.811
	822.00	155.759	295.600	205.310	−904.085	74.218	−1147.068	−969.441	−694.250	44.117

References

Phase	H / S	C_p
SOL	G1	G1

194.724

INDIUM MONOBROMIDE

InBr

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	50.998	113.000	113.000	−175.300	0.000	−208.991	−175.300	−169.060	29.619
	300.00	51.045	113.316	113.001	−175.206	0.094	−209.200	−175.325	−169.022	29.429
	400.00	53.555	128.344	115.033	−169.976	5.324	−221.313	−190.081	−163.852	21.397
	500.00	56.066	140.564	118.953	−164.495	10.805	−234.777	−192.661	−156.835	16.384
	558.35	57.530	146.832	121.544	−161.180	14.120	−243.164	−192.146	−152.682	14.284
			43.462		24.267					
LIQ	558.35	60.668	190.294	121.544	−136.913	38.387	−243.164	−167.879	−152.682	14.284
	600.00	60.668	194.659	126.470	−134.387	40.913	−251.182	−167.350	−151.568	13.195
	700.00	60.668	204.011	136.896	−128.320	46.980	−271.127	−166.080	−149.038	11.121
	800.00	60.668	212.112	145.803	−122.253	53.047	−291.942	−164.807	−146.690	9.578
	900.00	60.668	219.257	153.575	−116.186	59.114	−313.518	−163.531	−144.502	8.387
	1000.00	60.668	225.649	160.469	−110.119	65.181	−335.769	−162.255	−142.456	7.441
	1002.66	60.668	225.811	160.642	−109.958	65.342	−336.369	−162.221	−142.403	7.419

References

Phase	H / S	C_p	Remarks
SOL	Nb1	e	
LIQ	Tk1	e	e BPT= 1002.66, L= 80.0 kJ

194.724

INDIUM MONOBROMIDE (GAS)

InBr[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	36.647	259.480	259.480	−56.900	0.000	−134.264	−56.900	−94.333	16.527
	300.00	36.671	259.707	259.480	−56.832	0.068	−134.744	−56.952	−94.565	16.465
	400.00	37.543	270.392	260.932	−53.116	3.784	−161.273	−73.221	−103.811	13.556
	500.00	37.978	278.821	263.696	−49.337	7.563	−188.748	−77.504	−110.806	11.576
	600.00	38.242	285.771	266.813	−45.526	11.374	−216.988	−78.489	−117.374	10.218
	700.00	38.423	291.680	269.954	−41.692	15.208	−245.868	−79.452	−123.778	9.236
	800.00	38.562	296.820	272.998	−37.842	19.058	−275.298	−80.397	−130.046	8.491
	900.00	38.676	301.369	275.902	−33.980	22.920	−305.212	−81.325	−136.196	7.905
	1000.00	38.773	305.449	278.657	−30.108	26.792	−335.557	−82.243	−142.244	7.430
	1100.00	38.861	309.149	281.263	−26.226	30.674	−366.289	−83.156	−148.199	7.037
	1200.00	38.942	312.533	283.730	−22.336	34.564	−397.376	−84.063	−154.072	6.707
	1300.00	39.017	315.653	286.067	−18.438	38.462	−428.787	−84.966	−159.870	6.424
	1400.00	39.090	318.548	288.285	−14.532	42.368	−460.499	−85.864	−165.598	6.179
	1500.00	39.159	321.247	290.393	−10.620	46.280	−492.490	−86.758	−171.262	5.964
	1600.00	39.227	323.776	292.402	−6.701	50.199	−524.743	−87.648	−176.867	5.774
	1700.00	39.293	326.156	294.318	−2.775	54.125	−557.240	−88.534	−182.416	5.605
	1800.00	39.358	328.404	296.150	1.158	58.058	−589.970	−89.416	−187.913	5.453
	1900.00	39.422	330.534	297.904	5.097	61.997	−622.917	−90.294	−193.361	5.316
	2000.00	39.485	332.558	299.586	9.042	65.942	−656.073	−91.168	−198.763	5.191

References

Phase	H / S	C_p
GAS	Nb1	Nb1,e

InBr3 — INDIUM TRIBROMIDE — 354.532

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	98.223	178.657	178.657	−428.902	0.000	−482.169	−428.902	−396.857	69.528
	300.00	98.324	179.265	178.659	−428.720	0.182	−482.500	−428.980	−396.658	69.064
	400.00	103.763	208.296	182.580	−418.616	10.286	−501.934	−473.344	−376.656	49.186
	500.00	109.202	232.034	190.165	−407.968	20.934	−523.985	−474.448	−352.190	36.793
	600.00	114.642	252.425	198.880	−396.775	32.127	−548.230	−471.771	−327.981	28.553
	692.85	119.692	269.274	207.204	−385.896	43.006	−572.463	−468.814	−305.941	23.065

References

Phase	H / S	C_p	Remarks
SOL	Nb1/e	e	Tk1 SPT= 682., L= 123.4 kJ / MPT= 692.85

InCl — INDIUM MONOCHLORIDE — 150.273

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	51.456	100.002	100.002	−186.021	0.000	−215.837	−186.021	−165.336	28.966
	300.00	51.509	100.320	100.003	−185.926	0.095	−216.022	−186.007	−165.207	28.765
	387.00	54.021	113.743	101.635	−181.335	4.686	−225.354	−185.293	−159.270	21.497
			1.351		0.523					
SOL−B	387.00	55.999	115.094	101.635	−180.812	5.209	−225.354	−184.770	−159.270	21.497
	400.00	55.999	116.945	102.103	−180.084	5.937	−226.862	−184.644	−158.415	20.687
	484.00	55.999	127.619	105.634	−175.380	10.641	−237.148	−187.181	−152.567	16.465
			44.002		21.297					
LIQ	484.00	66.998	171.621	105.634	−154.083	31.938	−237.148	−165.884	−152.567	16.465
	500.00	66.998	173.800	107.781	−153.011	33.010	−239.911	−165.571	−152.132	15.893
	600.00	66.998	186.015	119.833	−146.312	39.709	−257.921	−163.627	−149.627	13.026
	700.00	66.998	196.343	130.044	−139.612	46.409	−277.052	−161.694	−147.447	11.003
	800.00	66.998	205.290	138.903	−132.912	53.109	−297.143	−159.768	−145.543	9.503
	900.00	66.998	213.181	146.726	−126.212	59.809	−318.075	−157.842	−143.881	8.351
	1000.00	66.998	220.240	153.731	−119.512	66.509	−339.752	−155.921	−142.432	7.440
	1100.00	66.998	226.625	160.072	−112.812	73.209	−362.100	−154.006	−141.176	6.704

References

Phase	H / S	C_p
SOL−A	Pa2	Pa2
SOL−B	Pa2	Pa2
LIQ	Pa2	Pa2

150.273

INDIUM MONOCHLORIDE (GAS) — InCl[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	36.137	248.271	248.271	−71.630	0.000	−145.652	−71.630	−95.151	16.670
	300.00	36.155	248.494	248.272	−71.563	0.067	−146.111	−71.644	−95.297	16.593
	400.00	36.802	258.996	249.699	−67.911	3.719	−171.510	−72.471	−103.063	13.459
	500.00	37.139	267.248	252.413	−64.213	7.417	−197.837	−76.772	−110.057	11.498
	600.00	37.354	274.039	255.468	−60.487	11.143	−224.911	−77.803	−116.617	10.152
	700.00	37.511	279.810	258.544	−56.744	14.886	−252.611	−78.827	−123.006	9.179
	800.00	37.637	284.827	261.522	−52.986	18.644	−280.848	−79.842	−129.247	8.439
	900.00	37.745	289.266	264.363	−49.217	22.413	−309.557	−80.847	−135.363	7.856
	1000.00	37.843	293.248	267.056	−45.438	26.192	−338.686	−81.846	−141.366	7.384
	1100.00	37.933	296.859	269.604	−41.649	29.981	−368.194	−82.842	−147.270	6.993
	1200.00	38.018	300.164	272.015	−37.851	33.779	−398.047	−83.835	−153.083	6.664
	1300.00	38.099	303.210	274.299	−34.045	37.585	−428.218	−84.823	−158.814	6.381
	1400.00	38.179	306.036	276.466	−30.231	41.399	−458.682	−85.808	−164.468	6.136
	1500.00	38.256	308.673	278.526	−26.410	45.220	−489.419	−86.788	−170.053	5.922
	1600.00	38.332	311.144	280.488	−22.580	49.050	−520.411	−87.765	−175.572	5.732
	1700.00	38.406	313.470	282.361	−18.743	52.887	−551.643	−88.737	−181.030	5.562
	1800.00	38.480	315.668	284.151	−14.899	56.731	−583.101	−89.706	−186.431	5.410
	1900.00	38.554	317.750	285.865	−11.047	60.583	−614.773	−90.671	−191.779	5.272
	2000.00	38.626	319.730	287.509	−7.188	64.442	−646.648	−91.632	−197.075	5.147

References

Phase	H / S	C_p
GAS	Pa2	Pa2

185.725

INDIUM DICHLORIDE — InCl2

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−2	298.15	73.546	122.173	122.173	−362.753	0.000	−399.179	−362.753	−315.417	55.260
	300.00	73.638	122.628	122.174	−362.617	0.136	−399.405	−362.729	−315.123	54.868
	400.00	78.659	144.500	125.123	−355.002	7.751	−412.802	−361.327	−299.462	39.106
	463.00	81.822	156.231	128.572	−349.947	12.806	−422.282	−363.637	−289.535	32.665
			0.000		0.000					
SOL−1	463.00	81.822	156.231	128.572	−349.947	12.806	−422.282	−363.637	−289.535	32.665
	500.00	83.680	162.592	130.856	−346.885	15.868	−428.181	−362.995	−283.638	29.631

References

Phase	H / S	C_p
SOL−2	Tk1	e
SOL−1	u	e

InCl2[g] INDIUM DICHLORIDE (GAS) 185.725

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	54.125	312.001	312.002	−222.087	0.000	−315.110	−222.087	−231.348	40.531
	300.00	54.172	312.336	312.003	−221.987	0.100	−315.688	−222.099	−231.406	40.291
	400.00	55.830	328.181	314.152	−216.475	5.612	−347.748	−222.800	−234.408	30.610
	500.00	56.612	340.733	318.256	−210.849	11.238	−381.215	−226.959	−236.672	24.725
	600.00	57.050	351.096	322.891	−205.164	16.923	−415.822	−227.847	−238.531	20.766
	700.00	57.326	359.913	327.566	−199.444	22.643	−451.383	−228.733	−240.242	17.927
	800.00	57.514	367.581	332.099	−193.702	28.385	−487.766	−229.616	−241.826	15.790
	900.00	57.653	374.363	336.425	−187.943	34.144	−524.870	−230.495	−243.299	14.121
	1000.00	57.760	380.443	340.528	−182.172	39.915	−562.615	−231.374	−244.675	12.780
	1100.00	57.846	385.953	344.411	−176.392	45.695	−600.940	−232.255	−245.962	11.680
	1200.00	57.919	390.989	348.086	−170.603	51.484	−639.790	−233.138	−247.169	10.759
	1300.00	57.982	395.628	351.567	−164.808	57.279	−679.124	−234.024	−248.303	9.977
	1400.00	58.038	399.927	354.870	−159.007	63.080	−718.905	−234.912	−249.368	9.304
	1500.00	58.088	403.933	358.009	−153.201	68.886	−759.100	−235.802	−250.369	8.719
	1600.00	58.135	407.683	360.997	−147.390	74.697	−799.683	−236.695	−251.311	8.204
	1700.00	58.178	411.209	363.848	−141.574	80.513	−840.629	−237.590	−252.198	7.749
	1800.00	58.219	414.535	366.573	−135.754	86.333	−881.918	−238.488	−253.031	7.343
	1900.00	58.258	417.684	369.181	−129.930	92.157	−923.530	−239.390	−253.814	6.978
	2000.00	58.296	420.673	371.681	−124.103	97.984	−965.449	−240.295	−254.550	6.648

References

Phase	H / S	C_p
GAS	Pa2	Pa2

InCl3 INDIUM TRICHLORIDE 221.178

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	95.250	141.001	141.001	−537.226	0.000	−579.265	−537.226	−462.242	80.983
	300.00	95.353	141.590	141.003	−537.050	0.176	−579.527	−537.193	−461.777	80.403
	400.00	100.918	169.784	144.809	−527.236	9.990	−595.150	−535.326	−436.916	57.055
	500.00	106.483	192.901	152.181	−516.866	20.360	−613.317	−536.527	−412.010	43.042
	600.00	112.048	212.807	160.663	−505.940	31.286	−633.624	−533.991	−387.336	33.721
	700.00	117.612	230.497	169.398	−494.457	42.769	−655.804	−530.952	−363.127	27.097
	800.00	123.177	246.565	178.054	−482.417	54.809	−679.669	−527.391	−339.389	22.160
	856.00	126.293	255.003	182.814	−475.432	61.794	−693.715	−525.164	−326.304	19.912

References

Phase	H / S	C_p	Remarks	
SOL	Tk1/e	e	Tk1	MPT= 856.

221.178 INDIUM TRICHLORIDE (GAS) **InCl3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[	J / (K mol)	]	[		kJ / mol		]	[−]
GAS	298.15	76.701	341.357	341.357	−374.050	0.000	−475.825	−374.050	−358.802	62.861
	300.00	76.769	341.831	341.358	−373.908	0.142	−476.457	−374.052	−358.708	62.457
	400.00	79.320	364.312	344.406	−366.088	7.962	−511.812	−374.177	−353.579	46.173
	500.00	80.603	382.164	350.234	−358.085	15.965	−549.167	−377.745	−347.860	36.341
	600.00	81.334	396.930	356.821	−349.985	24.065	−588.143	−378.036	−341.856	29.761
	700.00	81.788	409.504	363.472	−341.827	32.223	−628.480	−378.323	−335.803	25.058
	800.00	82.089	420.446	369.924	−333.632	40.418	−669.990	−378.606	−329.709	21.528
	900.00	82.298	430.128	376.086	−325.412	48.638	−712.528	−378.887	−323.580	18.780
	1000.00	82.449	438.807	381.932	−317.175	56.875	−755.982	−379.169	−317.420	16.580
	1100.00	82.561	446.671	387.465	−308.924	65.126	−800.262	−379.456	−311.231	14.779
	1200.00	82.647	453.858	392.703	−300.663	73.387	−845.293	−379.749	−305.016	13.277
	1300.00	82.714	460.476	397.665	−292.395	81.655	−891.015	−380.049	−298.776	12.005
	1400.00	82.766	466.608	402.373	−284.121	89.929	−937.373	−380.354	−292.513	10.914
	1500.00	82.809	472.320	406.848	−275.842	98.208	−984.322	−380.666	−286.228	9.967
	1600.00	82.843	477.665	411.109	−267.560	106.490	−1031.824	−380.985	−279.921	9.138
	1700.00	82.872	482.689	415.173	−259.274	114.776	−1079.845	−381.312	−273.595	8.407
	1800.00	82.895	487.426	419.057	−250.985	123.065	−1128.353	−381.647	−267.249	7.755
	1900.00	82.915	491.909	422.774	−242.695	131.355	−1177.321	−381.991	−260.884	7.172
	2000.00	82.931	496.162	426.338	−234.403	139.647	−1226.727	−382.344	−254.501	6.647

References

Phase	H / S	C_p
GAS	Pa2	Pa2

In2Cl6[g] DIINDIUM HEXACHLORIDE (GAS) 442.356

Phase	T	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	168.964	528.992	528.992	–884.665	0.000	–1042.384	–884.665	–808.338	141.617
	300.00	169.117	530.038	528.995	–884.352	0.313	–1043.364	–884.640	–807.864	140.662
	400.00	174.756	579.566	535.710	–867.122	17.543	–1098.949	–883.302	–782.482	102.182
	500.00	177.554	618.895	548.550	–849.493	35.172	–1158.940	–888.814	–756.326	79.013
	600.00	179.136	651.419	563.063	–831.651	53.014	–1222.503	–887.754	–729.928	63.546
	700.00	180.115	679.112	577.712	–813.685	70.980	–1289.063	–886.676	–703.709	52.511
	800.00	180.761	703.208	591.926	–795.639	89.026	–1358.205	–885.587	–677.645	44.246
	900.00	181.209	724.526	605.497	–777.539	107.126	–1429.613	–884.488	–651.718	37.825
	1000.00	181.532	743.636	618.372	–759.401	125.264	–1503.037	–883.389	–625.913	32.694
	1100.00	181.773	760.949	630.559	–741.236	143.429	–1578.280	–882.300	–600.219	28.502
	1200.00	181.956	776.774	642.094	–723.049	161.616	–1655.177	–881.221	–574.622	25.013
	1300.00	182.098	791.344	653.022	–704.846	179.819	–1733.593	–880.153	–549.116	22.064
	1400.00	182.211	804.843	663.390	–686.630	198.035	–1813.411	–879.096	–523.691	19.539
	1500.00	182.301	817.418	673.244	–668.405	216.260	–1894.531	–878.052	–498.342	17.354
	1600.00	182.375	829.185	682.626	–650.171	234.494	–1976.867	–877.022	–473.061	15.444
	1700.00	182.435	840.244	691.576	–631.930	252.735	–2060.344	–876.007	–447.845	13.761
	1800.00	182.485	850.673	700.128	–613.684	270.981	–2144.895	–875.008	–422.688	12.266
	1900.00	182.527	860.540	708.313	–595.433	289.232	–2230.460	–874.025	–397.586	10.930
	2000.00	182.562	869.904	716.161	–577.179	307.486	–2316.986	–873.061	–372.535	9.730

References

Phase	H / S	C_p
GAS	Pa2	Pa2

133.818

INDIUM MONOFLUORIDE (GAS)

InF[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	34.151	236.254	236.254	−193.719	0.000	−264.158	−193.719	−216.687	37.963
	300.00	34.189	236.466	236.255	−193.656	0.063	−264.596	−193.734	−216.829	37.753
	400.00	35.552	246.514	237.616	−190.160	3.559	−288.765	−194.590	−224.403	29.304
	500.00	36.230	254.528	240.224	−186.567	7.152	−313.831	−198.894	−231.203	24.154
	600.00	36.639	261.172	243.178	−182.922	10.797	−339.626	−199.923	−237.568	20.682
	700.00	36.920	266.842	246.163	−179.244	14.475	−366.033	−200.949	−243.760	18.190
	800.00	37.133	271.786	249.064	−175.541	18.178	−392.970	−201.969	−249.807	16.311
	900.00	37.307	276.170	251.836	−171.818	21.901	−420.372	−202.983	−255.725	14.842
	1000.00	37.456	280.109	254.470	−168.080	25.639	−448.189	−203.992	−261.532	13.661
	1100.00	37.590	283.685	256.966	−164.328	29.391	−476.382	−205.001	−267.237	12.690
	1200.00	37.712	286.961	259.331	−160.562	33.157	−504.916	−206.008	−272.850	11.877
	1300.00	37.827	289.985	261.574	−156.785	36.934	−533.765	−207.012	−278.379	11.185
	1400.00	37.936	292.792	263.705	−152.997	40.722	−562.906	−208.013	−283.832	10.590
	1500.00	38.041	295.413	265.732	−149.198	44.521	−592.318	−209.010	−289.212	10.071
	1600.00	38.143	297.871	267.665	−145.389	48.330	−621.983	−210.004	−294.527	9.615
	1700.00	38.243	300.187	269.511	−141.570	52.149	−651.887	−210.993	−299.779	9.211
	1800.00	38.341	302.375	271.276	−137.740	55.979	−682.016	−211.978	−304.973	8.850
	1900.00	38.437	304.451	272.968	−133.902	59.817	−712.358	−212.959	−310.113	8.526
	2000.00	38.532	306.425	274.592	−130.053	63.666	−742.903	−213.934	−315.201	8.232

References

Phase	H / S	C_p
GAS	Pa2	Pa2

InF2[g] INDIUM DIFLUORIDE (GAS) 152.817

Phase	T [K]	C_p [J / (K mol)]	S [J / (K mol)]	−(G−H298)/T [J / (K mol)]	H [kJ / mol]	H−H298 [kJ / mol]	G [kJ / mol]	ΔH_f [kJ / mol]	ΔG_f [kJ / mol]	log K_f [−]
GAS	298.15	49.437	291.830	291.831	−477.478	0.000	−564.487	−477.478	−486.784	85.283
	300.00	49.503	292.137	291.831	−477.386	0.092	−565.027	−477.494	−486.842	84.767
	400.00	52.397	306.805	293.812	−472.281	5.197	−595.003	−478.347	−489.832	63.965
	500.00	54.177	318.705	297.638	−466.944	10.534	−626.297	−482.588	−492.055	51.405
	600.00	55.282	328.688	302.004	−461.467	16.011	−658.680	−483.522	−493.861	42.994
	700.00	56.000	337.268	306.443	−455.901	21.577	−691.988	−484.435	−495.511	36.976
	800.00	56.487	344.779	310.775	−450.275	27.203	−726.098	−485.336	−497.032	32.453
	900.00	56.829	351.453	314.931	−444.608	32.870	−760.916	−486.228	−498.441	28.929
	1000.00	57.079	357.454	318.888	−438.912	38.566	−796.366	−487.120	−499.750	26.104
	1100.00	57.266	362.904	322.646	−433.194	44.284	−832.388	−488.017	−500.969	23.789
	1200.00	57.410	367.893	326.212	−427.460	50.018	−868.932	−488.919	−502.107	21.856
	1300.00	57.524	372.493	329.597	−421.713	55.765	−905.954	−489.827	−503.169	20.218
	1400.00	57.615	376.759	332.815	−415.956	61.522	−943.419	−490.740	−504.161	18.810
	1500.00	57.691	380.737	335.879	−410.191	67.287	−981.296	−491.660	−505.088	17.589
	1600.00	57.754	384.462	338.800	−404.419	73.059	−1019.558	−492.585	−505.953	16.518
	1700.00	57.808	387.965	341.590	−398.641	78.837	−1058.181	−493.516	−506.760	15.571
	1800.00	57.854	391.271	344.259	−392.857	84.621	−1097.145	−494.454	−507.512	14.728
	1900.00	57.894	394.400	346.817	−387.070	90.408	−1136.430	−495.397	−508.212	13.972
	2000.00	57.930	397.370	349.271	−381.279	96.199	−1176.019	−496.346	−508.862	13.290

References

Phase	H / S	C_p
GAS	Pa2	Pa2

171.815

INDIUM TRIFLUORIDE

InF3

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	92.018	110.002	110.002	−1189.930	0.000	−1222.727	−1189.930	−1114.792	195.307
	300.00	92.086	110.571	110.003	−1189.760	0.170	−1222.931	−1189.896	−1114.326	194.021
	400.00	95.742	137.563	113.659	−1180.368	9.562	−1235.394	−1188.070	−1089.414	142.263
	500.00	99.399	159.320	120.683	−1170.611	19.319	−1250.271	−1189.573	−1064.417	111.199
	600.00	103.056	177.766	128.697	−1160.488	29.442	−1267.148	−1187.597	−1039.567	90.502
	700.00	106.713	193.927	136.884	−1150.000	39.930	−1285.749	−1185.363	−1015.068	75.745
	800.00	110.370	208.415	144.935	−1139.146	50.784	−1305.878	−1182.838	−990.909	64.700
	900.00	114.027	221.626	152.733	−1127.926	62.004	−1327.389	−1180.002	−967.085	56.128
	1000.00	117.683	233.829	160.240	−1116.341	73.589	−1350.170	−1176.845	−943.594	49.288
	1100.00	121.340	245.217	167.453	−1104.389	85.541	−1374.128	−1173.361	−920.435	43.708
	1200.00	124.997	255.932	174.384	−1092.073	97.857	−1399.191	−1169.545	−897.607	39.072
	1300.00	128.654	266.081	181.051	−1079.390	110.540	−1425.296	−1165.390	−875.112	35.162
	1400.00	132.311	275.749	187.472	−1066.342	123.588	−1452.391	−1160.894	−852.949	31.824
	1445.00	133.956	279.961	190.287	−1060.351	129.579	−1464.895	−1158.758	−843.085	30.476
			44.301		64.015					
LIQ	1445.00	134.001	324.262	190.287	−996.336	193.594	−1464.895	−1094.743	−843.085	30.476
	1500.00	134.001	329.268	195.292	−988.966	200.964	−1482.868	−1092.091	−833.556	29.027
	1600.00	134.001	337.916	203.938	−975.566	214.364	−1516.232	−1087.283	−816.477	26.655
	1700.00	134.001	346.040	212.061	−962.165	227.765	−1550.433	−1082.494	−799.699	24.572
	1800.00	134.001	353.699	219.719	−948.765	241.165	−1585.424	−1077.720	−783.201	22.728
	1900.00	134.001	360.944	226.963	−935.365	254.565	−1621.159	−1072.962	−766.969	21.085
	2000.00	134.001	367.818	233.835	−921.965	267.965	−1657.601	−1068.219	−750.987	19.614

References

Phase	H / S	C_p
SOL	Pa2	Pa2
LIQ	Pa2	Pa2

InF_3[g] INDIUM TRIFLUORIDE (GAS) 171.815

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	69.828	309.977	309.977	−857.720	0.000	−950.139	−857.720	−842.205	147.551
	300.00	69.972	310.409	309.978	−857.591	0.129	−950.713	−857.727	−842.108	146.624
	400.00	75.084	331.342	312.797	−850.302	7.418	−982.839	−858.004	−836.859	109.283
	500.00	77.514	348.386	318.265	−842.659	15.061	−1016.852	−861.621	−830.998	86.814
	600.00	78.890	362.650	324.506	−834.834	22.886	−1052.424	−861.942	−824.843	71.809
	700.00	79.767	374.882	330.850	−826.898	30.822	−1089.315	−862.261	−818.634	61.087
	800.00	80.379	385.575	337.036	−818.889	38.831	−1127.349	−862.581	−812.380	53.043
	900.00	80.836	395.070	342.967	−810.827	46.893	−1166.390	−862.903	−806.086	46.784
	1000.00	81.197	403.606	348.611	−802.725	54.995	−1206.331	−863.229	−799.755	41.775
	1100.00	81.496	411.360	353.968	−794.590	63.130	−1247.085	−863.562	−793.392	37.675
	1200.00	81.752	418.462	359.051	−786.427	71.293	−1288.581	−863.899	−786.998	34.257
	1300.00	81.978	425.015	363.876	−778.240	79.480	−1330.759	−864.240	−780.576	31.364
	1400.00	82.182	431.097	368.463	−770.032	87.688	−1373.569	−864.584	−774.127	28.883
	1500.00	82.370	436.774	372.830	−761.805	95.915	−1416.965	−864.930	−767.654	26.732
	1600.00	82.546	442.096	376.995	−753.559	104.161	−1460.912	−865.276	−761.157	24.849
	1700.00	82.712	447.105	380.973	−745.296	112.424	−1505.374	−865.624	−754.639	23.187
	1800.00	82.871	451.837	384.780	−737.016	120.704	−1550.323	−865.971	−748.101	21.709
	1900.00	83.024	456.322	388.428	−728.722	128.998	−1595.733	−866.319	−741.543	20.386
	2000.00	83.172	460.584	391.930	−720.412	137.308	−1641.580	−866.666	−734.967	19.195

References

Phase	H / S	C_p
GAS	Pa2	Pa2

InI INDIUM MONOIODIDE 241.724

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	51.858	123.846	123.846	−115.897	0.000	−152.822	−115.897	−118.268	20.720
	300.00	51.882	124.167	123.847	−115.801	0.096	−153.051	−115.901	−118.283	20.595
	400.00	53.137	139.265	125.897	−110.550	5.347	−166.256	−124.214	−118.760	15.508
	500.00	54.392	151.257	129.810	−105.174	10.723	−180.802	−149.150	−114.775	11.990
	600.00	55.647	161.284	134.242	−99.672	16.225	−196.442	−148.461	−107.962	9.399
	638.00	56.124	164.716	135.956	−97.548	18.349	−202.637	−148.166	−105.406	8.630
			35.150		22.426					
LIQ	638.00	60.668	199.867	135.956	−75.122	40.775	−202.637	−125.740	−105.406	8.630
	700.00	60.668	205.493	141.870	−71.361	44.536	−215.206	−124.960	−103.467	7.721
	800.00	60.668	213.594	150.340	−65.294	50.603	−236.169	−123.700	−100.482	6.561
	900.00	60.668	220.740	157.773	−59.227	56.670	−257.893	−122.435	−97.656	5.668

References

Phase	H / S	C_p
SOL	Tk1	Ku1
LIQ	Tk1	e

241.724

INDIUM MONOIODIDE (GAS)

InI[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	36.930	267.467	267.467	7.531	0.000	−72.214	7.531	−37.661	6.598
	300.00	36.936	267.695	267.468	7.599	0.068	−72.709	7.500	−37.941	6.606
	400.00	37.146	278.354	268.920	11.305	3.774	−100.037	−2.359	−52.541	6.861
	500.00	37.243	286.655	271.667	15.025	7.494	−128.303	−28.951	−62.275	6.506
	600.00	37.296	293.450	274.748	18.752	11.221	−157.318	−30.037	−68.838	5.993
	700.00	37.327	299.202	277.841	22.483	14.952	−186.958	−31.116	−75.219	5.613
	800.00	37.347	304.188	280.830	26.217	18.686	−217.133	−32.189	−81.446	5.318
	900.00	37.360	308.587	283.675	29.953	22.422	−247.776	−33.256	−87.539	5.081
	1000.00	37.370	312.524	286.366	33.689	26.158	−278.835	−34.321	−93.514	4.885
	1100.00	37.377	316.086	288.909	37.427	29.896	−310.269	−35.389	−99.381	4.719
	1200.00	37.381	319.339	291.311	41.164	33.633	−342.042	−36.459	−105.152	4.577
	1300.00	37.385	322.331	293.584	44.903	37.372	−374.128	−37.533	−110.833	4.453
	1400.00	37.388	325.102	295.737	48.641	41.110	−406.501	−38.609	−116.431	4.344
	1500.00	37.390	327.681	297.782	52.380	44.849	−439.142	−39.688	−121.952	4.247
	1600.00	37.391	330.094	299.727	56.119	48.588	−472.032	−40.770	−127.401	4.159
	1700.00	37.392	332.361	301.580	59.859	52.328	−505.156	−41.854	−132.782	4.080
	1800.00	37.393	334.499	303.350	63.598	56.067	−538.500	−42.942	−138.099	4.008
	1900.00	37.394	336.520	305.043	67.337	59.806	−572.051	−44.032	−143.356	3.941
	2000.00	37.394	338.438	306.666	71.077	63.546	−605.800	−45.126	−148.556	3.880

References

Phase	H / S	C_p
GAS	Nb1	Pa2

InI2[g] INDIUM DIIODIDE (GAS) 368.629

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	57.067	351.775	351.775	−23.430	0.000	−128.312	−23.430	−76.444	13.393
	300.00	57.081	352.128	351.776	−23.324	0.106	−128.963	−23.475	−76.773	13.367
	400.00	57.563	368.625	354.022	−17.589	5.841	−165.039	−42.123	−93.600	12.223
	500.00	57.788	381.496	358.276	−11.820	11.610	−202.568	−90.763	−101.529	10.607
	600.00	57.911	392.044	363.052	−6.035	17.395	−241.261	−91.666	−103.597	9.019
	700.00	57.986	400.977	367.848	−0.239	23.191	−280.924	−92.563	−105.515	7.874
	800.00	58.036	408.724	372.484	5.562	28.992	−321.417	−93.454	−107.304	7.006
	900.00	58.071	415.562	376.898	11.367	34.797	−362.638	−94.341	−108.982	6.325
	1000.00	58.097	421.681	381.076	17.176	40.606	−404.506	−95.228	−110.561	5.775
	1100.00	58.116	427.219	385.023	22.986	46.416	−446.955	−96.120	−112.052	5.321
	1200.00	58.132	432.277	388.753	28.799	52.229	−489.933	−97.016	−113.460	4.939
	1300.00	58.144	436.930	392.282	34.613	58.043	−533.397	−97.918	−114.794	4.612
	1400.00	58.155	441.240	395.627	40.428	63.858	−577.308	−98.825	−116.058	4.330
	1500.00	58.164	445.252	398.803	46.244	69.674	−621.635	−99.737	−117.258	4.083
	1600.00	58.172	449.006	401.825	52.060	75.490	−666.350	−100.654	−118.396	3.865
	1700.00	58.179	452.533	404.705	57.878	81.308	−711.429	−101.576	−119.476	3.671
	1800.00	58.185	455.859	407.456	63.696	87.126	−756.850	−102.504	−120.503	3.497
	1900.00	58.190	459.005	410.087	69.515	92.945	−802.595	−103.437	−121.477	3.340
	2000.00	58.196	461.990	412.608	75.334	98.764	−848.646	−104.376	−122.402	3.197

References

Phase	H / S	C_p
GAS	Pa2	Pa2

InI3 INDIUM TRIIODIDE 495.533

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	164.013	203.342	203.342	−234.722	0.000	−295.349	−234.722	−226.167	39.624
	300.00	164.013	204.357	203.346	−234.419	0.303	−295.726	−234.619	−226.114	39.370
	400.00	164.013	251.540	209.779	−218.017	16.705	−318.633	−253.421	−223.252	29.154
	480.00	164.013	281.444	219.307	−204.896	29.826	−339.989	−317.094	−213.902	23.277
			41.840		20.083					
LIQ	480.00	135.980	323.283	219.307	−184.813	49.909	−339.989	−297.011	−213.902	23.277
	500.00	135.980	328.834	223.577	−182.094	52.628	−346.511	−296.003	−210.459	21.987
	600.00	135.980	353.626	243.249	−168.496	66.226	−380.671	−290.969	−193.824	16.874
	700.00	135.980	374.588	260.553	−154.898	79.824	−417.109	−285.945	−178.030	13.285
	800.00	135.980	392.745	275.967	−141.300	93.422	−455.496	−280.925	−162.956	10.640

References

Phase	H / S	C_p	Remarks	
SOL	Tk1,e	e		
LIQ	Tk1	e	Tk1	BPT= 719.4, L= 95.4 kJ

495.533

INDIUM TRIIODIDE (GAS)

InI3[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	81.152	400.016	400.016	−120.499	0.000	−239.764	−120.499	−170.582	29.885
	300.00	81.176	400.518	400.018	−120.349	0.150	−240.504	−120.549	−170.893	29.755
	400.00	82.025	424.005	403.214	−112.183	8.316	−281.785	−147.586	−186.403	24.342
	500.00	82.419	442.355	409.274	−103.958	16.541	−325.136	−217.867	−189.085	19.754
	600.00	82.634	457.403	416.079	−95.705	24.794	−370.147	−218.178	−183.299	15.958
	700.00	82.765	470.152	422.916	−87.434	33.065	−416.540	−218.481	−177.462	13.242
	800.00	82.851	481.209	429.527	−79.153	41.346	−464.121	−218.779	−171.581	11.203
	900.00	82.910	490.971	435.822	−70.865	49.634	−512.739	−219.073	−165.664	9.615
	1000.00	82.954	499.709	441.782	−62.572	57.927	−562.281	−219.369	−159.714	8.343
	1100.00	82.986	507.617	447.413	−54.275	66.224	−612.653	−219.671	−153.734	7.300
	1200.00	83.012	514.839	452.735	−45.975	74.524	−663.781	−219.981	−147.726	6.430
	1300.00	83.032	521.484	457.772	−37.672	82.827	−715.602	−220.298	−141.692	5.693
	1400.00	83.049	527.638	462.545	−29.368	91.131	−768.062	−220.623	−135.633	5.061
	1500.00	83.063	533.369	467.078	−21.063	99.436	−821.116	−220.955	−129.551	4.511
	1600.00	83.075	538.730	471.390	−12.756	107.743	−874.723	−221.296	−123.446	4.030
	1700.00	83.085	543.766	475.501	−4.448	116.051	−928.851	−221.644	−117.320	3.605
	1800.00	83.094	548.516	479.427	3.861	124.360	−983.467	−222.000	−111.173	3.226
	1900.00	83.102	553.009	483.182	12.171	132.670	−1038.545	−222.364	−105.006	2.887
	2000.00	83.109	557.271	486.781	20.482	140.981	−1094.061	−222.736	−98.819	2.581

References

Phase	H / S	C_p
GAS	Pa2	Pa2

128.827

INDIUM NITRIDE

InN

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	41.692	43.514	43.514	−17.154	0.000	−30.128	−17.154	15.676	−2.746
	300.00	41.714	43.772	43.514	−17.077	0.077	−30.208	−17.153	15.880	−2.765
	400.00	42.928	55.938	45.165	−12.845	4.309	−35.220	−17.125	26.884	−3.511
	500.00	44.141	65.648	48.322	−8.491	8.663	−41.315	−20.456	38.430	−4.015
	600.00	45.355	73.803	51.907	−4.016	13.138	−48.298	−20.411	50.204	−4.371
	700.00	46.568	80.885	55.552	0.580	17.734	−56.040	−20.265	61.963	−4.624
	800.00	47.781	87.183	59.119	5.297	22.451	−64.449	−20.023	73.695	−4.812
	900.00	48.995	92.881	62.559	10.136	27.290	−73.457	−19.684	85.390	−4.956
	1000.00	50.208	98.106	65.856	15.096	32.250	−83.010	−19.252	97.043	−5.069
	1100.00	51.421	102.948	69.010	20.177	37.331	−93.065	−18.727	108.648	−5.159
	1200.00	52.635	107.474	72.029	25.380	42.534	−103.589	−18.106	120.200	−5.232
	1300.00	53.848	111.735	74.921	30.704	47.858	−114.551	−17.387	131.698	−5.292
	1400.00	55.061	115.770	77.696	36.150	53.304	−125.928	−16.566	143.135	−5.340
	1473.00	55.947	118.591	79.653	40.202	57.356	−134.483	−15.902	151.446	−5.370

References

Phase	H / S	C_p	Remarks	
SOL	Tk1/Ku1	e	Tk1	MPT= 1473.

In2O[g] DIINDIUM OXIDE (GAS) 245.639

Phase	T	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	49.790	298.319	298.319	–65.689	0.000	–154.633	–65.689	–89.571	15.692
	300.00	49.844	298.627	298.320	–65.597	0.092	–155.185	–65.723	–89.719	15.621
	400.00	52.590	313.357	300.310	–60.470	5.219	–185.813	–67.572	–97.445	12.725
	500.00	54.531	325.316	304.152	–55.107	10.582	–217.765	–76.168	–103.603	10.823
	600.00	55.822	335.380	308.540	–49.585	16.104	–250.813	–78.101	–108.907	9.481
	700.00	56.704	344.055	313.009	–43.956	21.733	–284.795	–79.958	–113.894	8.499
	800.00	57.329	351.670	317.375	–38.253	27.436	–319.589	–81.764	–118.618	7.745
	900.00	57.788	358.450	321.569	–32.496	33.193	–355.101	–83.533	–123.118	7.146
	1000.00	58.135	364.558	325.568	–26.699	38.990	–391.257	–85.283	–127.422	6.656
	1100.00	58.403	370.112	329.369	–20.872	44.817	–427.994	–87.026	–131.552	6.247
	1200.00	58.615	375.203	332.979	–15.020	50.669	–465.264	–88.765	–135.523	5.899
	1300.00	58.784	379.901	336.410	–9.150	56.539	–503.022	–90.502	–139.349	5.599
	1400.00	58.921	384.263	339.674	–3.265	62.424	–541.233	–92.239	–143.041	5.337
	1500.00	59.032	388.332	342.784	2.633	68.322	–579.865	–93.977	–146.610	5.105
	1600.00	59.123	392.145	345.751	8.541	74.230	–618.891	–95.719	–150.062	4.899
	1700.00	59.196	395.731	348.587	14.457	80.146	–658.286	–97.464	–153.405	4.714
	1800.00	59.256	399.117	351.301	20.380	86.069	–698.030	–99.215	–156.645	4.546
	1900.00	59.304	402.322	353.902	26.308	91.997	–738.104	–100.973	–159.787	4.393
	2000.00	59.341	405.365	356.400	32.240	97.929	–778.489	–102.738	–162.837	4.253

References

Phase	H / S	C_p
GAS	C2/Tk1	e

277.638

DIINDIUM TRIOXIDE

In_2O_3

Phase	T [K]	C_p [J / (K mol)]	S [J / (K mol)]	$-(G-H298)/T$ [J / (K mol)]	H [kJ / mol]	H–H298 [kJ / mol]	G [kJ / mol]	ΔH_f [kJ / mol]	ΔG_f [kJ / mol]	log K_f [–]
SOL	298.15	100.416	104.198	104.198	–925.789	0.000	–956.856	–925.789	–830.629	145.523
	300.00	100.734	104.820	104.200	–925.603	0.186	–957.049	–925.783	–830.039	144.523
	400.00	112.212	135.592	108.318	–914.879	10.910	–969.116	–925.007	–798.225	104.237
	500.00	117.960	161.310	116.419	–903.343	22.446	–983.998	–930.489	–765.574	79.979
	600.00	121.452	183.147	125.767	–891.361	34.428	–1001.249	–929.121	–732.716	63.789
	700.00	123.879	202.061	135.345	–879.088	46.701	–1020.531	–927.588	–700.102	52.242
	800.00	125.739	218.729	144.747	–866.604	59.185	–1041.587	–925.950	–667.714	43.597
	900.00	127.268	233.629	153.810	–853.951	71.838	–1064.218	–924.229	–635.537	36.886
	1000.00	128.593	247.108	162.476	–841.157	84.632	–1088.265	–922.444	–603.556	31.527
	1100.00	129.784	259.421	170.738	–828.237	97.552	–1113.600	–920.603	–571.756	27.150
	1200.00	130.884	270.762	178.607	–815.203	110.586	–1140.117	–918.708	–540.125	23.511
	1300.00	131.919	281.279	186.105	–802.062	123.727	–1167.725	–916.758	–508.656	20.438
	1400.00	132.908	291.092	193.257	–788.821	136.968	–1196.349	–914.752	–477.338	17.810
	1500.00	133.862	300.294	200.090	–775.482	150.307	–1225.923	–912.691	–446.166	15.537
	1600.00	134.791	308.963	206.626	–762.049	163.740	–1256.391	–910.574	–415.133	13.553

References

Phase	H / S	C_p	Remarks
SOL	Nb1	Pa1	Tk1 MPT= 2183.

InP — INDIUM PHOSPHIDE — 145.794

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL–A	298.15	45.436	59.802	59.802	–88.701	0.000	–106.531	–88.701	–77.046	13.498
	300.00	45.463	60.083	59.803	–88.617	0.084	–106.642	–88.710	–76.974	13.402
	400.00	46.928	73.363	61.603	–83.997	4.704	–113.342	–90.088	–72.790	9.505
	500.00	48.392	83.992	65.052	–79.231	9.470	–121.227	–94.169	–67.834	7.087
	600.00	49.857	92.944	68.974	–74.319	14.382	–130.085	–94.827	–62.502	5.441
	700.00	51.321	100.739	72.967	–69.260	19.441	–139.778	–95.330	–57.073	4.259
	800.00	52.785	107.688	76.880	–64.055	24.646	–150.205	–95.677	–51.582	3.368
	900.00	54.250	113.990	80.658	–58.703	29.998	–161.294	–95.870	–46.057	2.673
	910.00	54.396	114.590	81.028	–58.160	30.541	–162.437	–95.881	–45.504	2.612
			0.414		0.377					
SOL–B	910.00	55.229	115.004	81.028	–57.783	30.918	–162.437	–95.504	–45.504	2.612
	1000.00	55.229	120.213	84.324	–52.812	35.889	–173.025	–95.520	–40.558	2.119
	1100.00	55.229	125.477	87.830	–47.289	41.412	–185.314	–95.537	–35.061	1.665
	1200.00	55.229	130.282	91.170	–41.766	46.935	–198.105	–159.126	–28.473	1.239
	1300.00	55.229	134.703	94.351	–36.244	52.457	–211.357	–158.369	–17.616	0.708
	1328.00	55.229	135.880	95.214	–34.697	54.004	–215.145	–158.158	–14.587	0.574
			47.259		62.760					
LIQ	1328.00	58.576	183.139	95.214	28.063	116.764	–215.145	–95.398	–14.587	0.574
	1400.00	58.576	186.232	99.816	32.280	120.981	–228.444	–94.615	–10.226	0.382
	1500.00	58.576	190.273	105.714	38.138	126.839	–247.271	–93.533	–4.236	0.148
	1600.00	58.576	194.053	111.118	43.996	132.697	–266.490	–92.453	1.682	–0.055
	1700.00	58.576	197.604	116.102	49.853	138.554	–286.074	–91.377	7.532	–0.231

References

Phase	H / S	C_p
SOL–A	Nb1	Tk1,e
SOL–B	Tk1	e
LIQ	Tk1	e

146.886

INDIUM MONOSULFIDE

InS

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	48.123	69.036	69.036	−133.888	0.000	−154.471	−133.888	−127.674	22.368
	300.00	48.158	69.334	69.037	−133.799	0.089	−154.599	−133.891	−127.635	22.223
	400.00	50.041	83.446	70.948	−128.889	4.999	−162.267	−136.307	−125.437	16.380
	500.00	51.923	94.814	74.620	−123.791	10.097	−171.198	−141.326	−122.001	12.745
	600.00	53.806	104.447	78.808	−118.504	15.384	−181.173	−142.553	−118.010	10.274
	700.00	55.689	112.883	83.085	−113.030	20.858	−192.048	−143.317	−113.855	8.496
	800.00	57.572	120.442	87.290	−107.367	26.521	−203.720	−143.934	−109.604	7.156
	900.00	59.455	127.332	91.362	−101.515	32.373	−216.114	−197.201	−104.128	6.043
	965.00	60.678	131.520	93.927	−97.611	36.277	−224.528	−196.379	−97.435	5.274
			37.287		35.982					
LIQ	965.00	60.668	168.807	93.927	−61.629	72.259	−224.528	−160.397	−97.435	5.274
	1000.00	60.668	170.969	96.586	−59.505	74.383	−230.474	−159.934	−95.160	4.971
	1100.00	60.668	176.751	103.615	−53.439	80.449	−247.865	−158.618	−88.746	4.214
	1200.00	60.668	182.030	109.933	−47.372	86.516	−265.808	−157.307	−82.452	3.589
	1300.00	60.668	186.886	115.668	−41.305	92.583	−284.257	−156.002	−76.267	3.064
	1400.00	60.668	191.382	120.918	−35.238	98.650	−303.173	−154.702	−70.182	2.619
	1500.00	60.668	195.567	125.756	−29.171	104.717	−322.523	−153.407	−64.190	2.235
	1600.00	60.668	199.483	130.243	−23.105	110.783	−342.277	−152.117	−58.285	1.903
	1700.00	60.668	203.161	134.425	−17.038	116.850	−362.411	−150.830	−52.460	1.612
	1800.00	60.668	206.628	138.341	−10.971	122.917	−382.902	−149.548	−46.710	1.355

References

Phase	H / S	C_p
SOL	Mi1	Mi1
LIQ	Mi1	e

InS[g] INDIUM MONOSULFIDE (GAS) 146.886

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	35.028	251.777	251.777	233.049	0.000	157.982	233.049	184.779	–32.373
	300.00	35.057	251.994	251.778	233.114	0.065	157.516	233.022	184.480	–32.121
	400.00	36.084	262.241	253.168	236.678	3.629	131.782	229.260	168.613	–22.019
	500.00	36.560	270.350	255.822	240.313	7.264	105.138	222.778	154.335	–16.123
	600.00	36.818	277.041	258.817	243.983	10.934	77.759	219.935	140.922	–12.268
	700.00	36.974	282.729	261.837	247.673	14.624	49.763	217.386	127.956	–9.548
	800.00	37.075	287.673	264.764	251.376	18.327	21.238	214.808	115.355	–7.532
	900.00	37.144	292.044	267.557	255.087	22.038	–7.752	159.401	104.233	–6.050
	1000.00	37.194	295.960	270.205	258.804	25.755	–37.156	158.375	98.158	–5.127
	1100.00	37.230	299.507	272.710	262.526	29.477	–66.932	157.347	92.187	–4.378
	1200.00	37.258	302.748	275.080	266.250	33.201	–97.047	156.315	86.308	–3.757
	1300.00	37.280	305.731	277.325	269.977	36.928	–127.473	155.280	80.517	–3.235
	1400.00	37.297	308.494	279.453	273.706	40.657	–158.186	154.242	74.804	–2.791
	1500.00	37.311	311.068	281.476	277.436	44.387	–189.165	153.200	69.167	–2.409
	1600.00	37.322	313.476	283.402	281.168	48.119	–220.394	152.156	63.599	–2.076
	1700.00	37.332	315.739	285.238	284.901	51.852	–251.856	151.108	58.096	–1.785
	1800.00	37.340	317.873	286.992	288.634	55.585	–283.537	150.057	52.655	–1.528
	1900.00	37.346	319.892	288.671	292.369	59.320	–315.427	149.003	47.272	–1.300
	2000.00	37.352	321.808	290.281	296.104	63.055	–347.512	147.946	41.945	–1.095

References

Phase	H / S	C_p
GAS	Mi1	Mi1,e

325.838

DIINDIUM TRISULFIDE

In2S3

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	117.969	163.594	163.594	−355.640	0.000	−404.416	−355.640	−341.263	59.788
	300.00	118.122	164.325	163.597	−355.422	0.218	−404.719	−355.647	−341.174	59.404
	400.00	123.614	199.165	168.310	−343.298	12.342	−422.964	−362.757	−336.025	43.880
	500.00	126.332	227.070	177.365	−330.787	24.853	−444.322	−374.383	−327.748	34.240
	600.00	127.957	250.258	187.636	−318.067	37.573	−468.222	−378.266	−318.029	27.687
	660.00	128.665	262.488	193.893	−310.368	45.272	−483.609	−380.063	−311.916	24.686
			1.648		1.088					
SOL−B	660.00	134.342	264.136	193.893	−309.280	46.360	−483.609	−378.975	−311.916	24.686
	700.00	136.557	272.105	198.136	−303.862	51.778	−494.335	−379.848	−307.826	22.970
	800.00	142.097	290.702	208.563	−289.929	65.711	−522.490	−381.835	−297.400	19.418
	900.00	147.637	307.758	218.649	−275.442	80.198	−552.424	−541.792	−283.285	16.441
	1000.00	153.176	323.600	228.361	−260.402	95.238	−584.001	−538.072	−254.757	13.307
	1100.00	158.716	338.459	237.702	−244.807	110.833	−617.112	−533.820	−226.627	10.762
			3.652		4.017					
SOL−C	1100.00	159.410	342.111	237.702	−240.790	114.850	−617.112	−529.803	−226.627	10.762
	1200.00	159.410	355.981	246.989	−224.849	130.791	−652.026	−525.223	−199.267	8.674
	1300.00	159.410	368.741	255.870	−208.908	146.732	−688.271	−520.660	−172.290	6.923
	1400.00	159.410	380.554	264.359	−192.967	162.673	−725.743	−516.112	−145.663	5.435

References

Phase	H / S	C_p	Remarks	
SOL−A	Mi1	Mi1		
SOL−B	Mi1	Mi1		
SOL−C	Mi1	Mi1	Tk1	MPT= 1363.

766.496

PENTAINDIUM HEXASULFIDE

In5S6

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	262.316	374.468	374.468	−774.040	0.000	−885.688	−774.040	−742.143	130.020
	300.00	262.574	376.091	374.473	−773.554	0.486	−886.382	−774.054	−741.945	129.184
	400.00	273.743	453.266	384.920	−746.702	27.338	−928.008	−788.415	−730.577	95.404
	500.00	282.127	515.280	404.990	−718.895	55.145	−976.535	−815.095	−712.371	74.421
	600.00	289.414	567.373	427.826	−690.312	83.728	−1030.736	−822.656	−691.053	60.162
	700.00	296.184	612.500	451.055	−661.029	113.011	−1089.778	−827.877	−668.691	49.898
	800.00	302.677	652.476	473.781	−631.084	142.956	−1153.064	−832.693	−645.624	42.155
	900.00	309.010	688.493	495.669	−600.499	173.541	−1220.142	−1153.906	−615.046	35.696
	1000.00	315.243	721.373	516.619	−569.285	204.755	−1290.659	−1148.242	−555.471	29.015
	1100.00	321.412	751.709	536.629	−537.452	236.588	−1364.332	−1142.002	−496.491	23.576

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	e	Mi1	NDPT= 1043.

$In_2(SO_4)_3$ DIINDIUM TRISULFATE 517.831

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	280.002	272.002	272.002	−2787.000	0.000	−2868.097	−2787.000	−2437.958	427.120
	300.00	280.466	273.735	272.007	−2786.482	0.518	−2868.602	−2787.033	−2435.792	424.109
	400.00	305.570	357.858	283.308	−2757.180	29.820	−2900.323	−2794.792	−2318.246	302.732
	500.00	330.674	428.741	305.476	−2725.368	61.632	−2939.738	−2805.469	−2197.592	229.581
	600.00	355.778	491.249	331.324	−2691.045	95.955	−2985.794	−2806.707	−2075.843	180.718
	700.00	380.882	547.978	358.281	−2654.212	132.788	−3037.796	−2805.189	−1954.122	145.818
	800.00	405.986	600.476	385.312	−2614.869	172.131	−3095.250	−2801.788	−1832.754	119.667
	900.00	431.090	649.744	411.983	−2573.015	213.985	−3157.784	−2954.810	−1708.464	99.157
	943.00	441.885	670.114	423.290	−2554.246	232.754	−3186.163	−2949.799	−1649.032	91.343

References

Phase	H / S	C_p	Remarks
SOL	Nb1	Nb1,e	Tk1 TPT= 943.

InSb INDIUM ANTIMONY 236.570

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL–A	298.15	49.471	86.199	86.199	−30.501	0.000	−56.201	−30.501	−25.389	4.448
	300.00	49.531	86.505	86.200	−30.409	0.092	−56.361	−30.506	−25.357	4.415
	400.00	51.839	101.106	88.175	−25.329	5.172	−65.771	−30.733	−23.609	3.083
	500.00	53.223	112.832	91.972	−20.071	10.430	−76.487	−34.310	−21.256	2.221
	600.00	54.241	122.629	96.287	−14.696	15.805	−88.273	−34.551	−18.621	1.621
	700.00	55.085	131.055	100.666	−9.229	21.272	−100.967	−34.772	−15.949	1.190
	797.00	55.815	138.251	104.811	−3.850	26.651	−114.035	−35.006	−13.326	0.873
			59.898		47.739					
LIQ	797.00	66.944	198.149	104.811	43.889	74.390	−114.035	−12.733	−13.326	0.873
	800.00	66.944	198.401	105.162	44.090	74.591	−114.630	12.758	−13.424	0.876
	900.00	66.944	206.285	115.968	50.785	81.286	−134.872	13.532	−16.745	0.972
	1000.00	66.944	213.339	125.359	57.479	87.980	−155.860	−5.692	−18.033	0.942
	1100.00	66.944	219.719	133.651	64.173	94.674	−177.518	−5.043	−19.299	0.916
	1200.00	66.944	225.544	141.070	70.868	101.369	−199.785	−4.395	−20.623	0.898

References

Phase	H / S	C_p
SOL–A	Nb1	Pa3
LIQ	Pa3	Pa3

193.780

INDIUM MONOSELENIDE

InSe

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	50.303	81.588	81.588	−117.989	0.000	−142.314	−117.989	−112.475	19.705
	300.00	50.334	81.899	81.589	−117.896	0.093	−142.466	−117.992	−112.441	19.578
	400.00	51.965	96.603	83.583	−112.781	5.208	−151.422	−118.290	−110.554	14.437
	500.00	53.597	108.374	87.402	−107.503	10.486	−161.690	−128.037	−107.937	11.276
	600.00	55.229	118.290	91.744	−102.062	15.927	−173.036	−129.048	−103.819	9.038
	700.00	56.861	126.926	96.166	−96.457	21.532	−185.305	−129.887	−99.545	7.428
	800.00	58.492	134.625	100.501	−90.689	27.300	−198.390	−130.555	−95.163	6.213
	900.00	60.124	141.609	104.686	−84.759	33.230	−212.207	−131.050	−90.707	5.265
	933.00	60.663	143.784	106.031	−82.766	35.223	−216.916	−131.177	−89.226	4.995
			37.221		34.727					
LIQ	933.00	60.668	181.004	106.031	−48.039	69.950	−216.916	−96.450	−89.226	4.995
	1000.00	60.668	185.212	111.197	−43.974	74.015	−229.186	−96.688	−88.699	4.633
	1100.00	60.668	190.994	118.192	−37.907	80.082	−248.000	−150.355	−82.928	3.938
	1200.00	60.668	196.273	124.482	−31.840	86.149	−267.368	−149.264	−76.847	3.345

References

Phase	H / S	C_p
SOL	Mi1	Mi1
LIQ	Mi1	Mi1

InSe[g] INDIUM MONOSELENIDE (GAS) 193.780

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	36.639	263.701	263.701	221.750	0.000	143.127	221.750	172.967	−30.303
	300.00	36.640	263.928	263.702	221.818	0.068	142.639	221.721	172.664	−30.063
	400.00	36.697	274.476	265.140	225.485	3.735	115.694	219.975	156.562	−20.445
	500.00	36.754	282.671	267.857	229.157	7.407	87.822	208.623	141.575	−14.790
	600.00	36.812	289.378	270.902	232.835	11.085	59.209	205.849	128.426	−11.180
	700.00	36.869	295.056	273.957	236.520	14.770	29.980	203.089	115.740	−8.637
	800.00	36.926	299.983	276.909	240.209	18.459	0.223	200.344	103.449	−6.755
	900.00	36.984	304.336	279.719	243.905	22.155	−29.998	197.613	91.502	−5.311
	1000.00	37.041	308.235	282.379	247.606	25.856	−60.629	194.892	79.857	−4.171
	1100.00	37.098	311.769	284.893	251.313	29.563	−91.632	138.865	73.440	−3.487
	1200.00	37.156	314.999	287.269	255.026	33.276	−122.973	137.602	67.548	−2.940
	1300.00	37.213	317.975	289.518	258.744	36.994	−154.624	136.356	61.761	−2.482
	1400.00	37.270	320.735	291.651	262.468	40.718	−186.561	135.129	56.069	−2.092
	1500.00	37.328	323.308	293.676	266.198	44.448	−218.765	133.919	50.464	−1.757
	1600.00	37.385	325.719	295.605	269.934	48.184	−251.217	132.728	44.939	−1.467
	1700.00	37.442	327.988	297.443	273.675	51.925	−283.904	131.555	39.488	−1.213
	1800.00	37.500	330.129	299.200	277.422	55.672	−316.811	130.401	34.106	−0.990
	1900.00	37.557	332.158	300.882	281.175	59.425	−349.926	129.265	28.787	−0.791
	2000.00	37.614	334.086	302.494	284.934	63.184	−383.239	128.148	23.528	−0.614

References

Phase	H / S	C_p
GAS	Tk1/Mi1	Mi1

In2Se3 DIINDIUM TRISELENIDE 466.520

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	140.563	201.250	201.250	−326.352	0.000	−386.355	−326.352	−314.077	55.025
	300.00	141.064	202.121	201.253	−326.091	0.261	−386.728	−326.331	−314.001	54.672
	400.00	168.113	246.407	207.109	−310.633	15.719	−409.196	−324.366	−310.146	40.501
	470.00	187.048	275.004	215.111	−298.202	28.150	−427.454	−328.649	−307.218	34.143
			2.991		1.406					
SOL−B	470.00	187.048	277.996	215.111	−296.796	29.556	−427.454	−327.243	−307.218	34.143
	500.00	195.163	289.818	219.240	−291.063	35.289	−435.972	−343.656	−305.728	31.939
	600.00	222.212	327.791	234.195	−270.194	56.158	−466.869	−339.207	−298.515	25.988

References

Phase	H / S	C_p	Remarks
SOL−A	Mi1	Mi1	
SOL−B	Mi1	Mi1	Mi1 TPT= 920., 1020. / MPT= 1173.

242.420

INDIUM MONOTELLURIDE

InTe

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	47.741	105.688	105.688	−71.965	0.000	−103.476	−71.965	−71.478	12.523
	300.00	47.777	105.983	105.689	−71.877	0.088	−103.672	−71.974	−71.475	12.445
	400.00	49.714	119.993	107.586	−67.002	4.963	−114.999	−72.530	−71.233	9.302
	500.00	51.651	131.295	111.232	−61.934	10.031	−127.581	−76.582	−70.284	7.343
	600.00	53.589	140.883	115.394	−56.672	15.293	−141.202	−77.385	−68.949	6.003
	700.00	55.526	149.289	119.648	−51.216	20.749	−155.719	−78.207	−67.479	5.035
	800.00	57.463	156.830	123.832	−45.567	26.398	−171.031	−96.668	−64.009	4.179
	900.00	59.400	163.710	127.886	−39.723	32.242	−187.063	−97.502	−59.874	3.475
	965.00	60.659	167.896	130.441	−35.822	36.143	−197.841	−97.938	−57.141	3.093
			37.201		35.899					
LIQ	965.00	60.668	205.097	130.441	0.077	72.042	−197.841	−62.039	−57.141	3.093
	1000.00	60.668	207.258	133.092	2.201	74.166	−205.057	−62.252	−56.959	2.975
	1100.00	60.668	213.041	140.102	8.268	80.233	−226.077	−62.858	−56.401	2.678
	1200.00	60.668	218.319	146.403	14.334	86.299	−247.649	−63.465	−55.787	2.428

References

Phase	H / S	C_p
SOL	Mi1	Mi1
LIQ	Mi1	Mi1

357.240

DIINDIUM TELLURIDE

In2Te

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	67.462	154.808	154.808	−79.705	0.000	−125.861	−79.705	−76.624	13.424
	300.00	67.530	155.226	154.809	−79.580	0.125	−126.148	−79.727	−76.605	13.338
	400.00	71.212	175.157	157.502	−72.643	7.062	−142.706	−80.965	−75.386	9.844
	500.00	74.894	191.443	162.708	−65.338	14.367	−161.059	−88.996	−72.747	7.600
	600.00	78.576	205.423	168.689	−57.664	22.041	−180.918	−90.325	−69.369	6.039
	700.00	82.257	217.812	174.837	−49.623	30.082	−202.091	−91.490	−65.782	4.909
	733.00	83.472	221.629	176.858	−46.888	32.817	−209.342	−109.352	−64.312	4.583

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	e	Tk1	MPT= 733.

In2Te3 DIINDIUM TRITELLURIDE 612.440

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	123.351	234.304	234.304	−191.627	0.000	−261.485	−191.627	−182.733	32.014
	300.00	123.428	235.067	234.306	−191.399	0.228	−261.919	−191.640	−182.677	31.807
	400.00	127.612	271.148	239.198	−178.847	12.780	−287.306	−192.635	−179.559	23.448
	500.00	131.796	300.074	248.572	−165.876	25.751	−315.913	−200.812	−175.037	18.286
	600.00	135.980	324.473	259.240	−152.488	39.139	−347.171	−202.680	−169.710	14.775
	700.00	140.164	345.748	270.110	−138.680	52.947	−380.704	−204.776	−164.053	12.242
	800.00	144.348	364.738	280.772	−124.455	67.172	−416.245	−259.963	−152.440	9.953
	883.00	147.821	379.155	289.351	−112.330	79.297	−447.124	−262.049	−141.177	8.351
			0.000		0.000					
SOL−B	883.00	147.821	379.155	289.351	−112.330	79.297	−447.124	−262.049	−141.177	8.351
	900.00	148.532	381.981	291.074	−109.811	81.816	−453.594	−262.439	−138.846	8.058
	943.00	150.331	388.955	295.379	−103.385	88.242	−470.170	−263.372	−132.919	7.363
			86.520		81.588					
LIQ	943.00	154.808	475.474	295.379	−21.797	169.830	−470.170	−181.784	−132.919	7.363
	1000.00	154.808	484.560	305.906	−12.973	178.654	−497.533	−182.714	−129.937	6.787
	1100.00	154.808	499.315	322.829	2.508	194.135	−546.739	−184.346	−124.581	5.916
	1200.00	154.808	512.785	338.105	17.988	209.615	−597.353	−185.978	−119.075	5.183

References

Phase	H / S	C_p
SOL−A	Tk1/Mi1	e
SOL−B	u	e
LIQ	Tk1	e

192.220

IRIDIUM

Ir

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	24.961	35.505	35.505	0.000	0.000	−10.586	0.000	0.000	0.000
	300.00	24.971	35.660	35.506	0.046	0.046	−10.652	0.000	0.000	0.000
	400.00	25.507	42.917	36.492	2.570	2.570	−14.597	0.000	0.000	0.000
	500.00	26.043	48.666	38.371	5.148	5.148	−19.186	0.000	0.000	0.000
	600.00	26.579	53.462	40.497	7.779	7.779	−24.298	0.000	0.000	0.000
	700.00	27.202	57.603	42.652	10.466	10.466	−29.856	0.000	0.000	0.000
	800.00	27.901	61.280	44.755	13.221	13.221	−35.804	0.000	0.000	0.000
	900.00	28.621	64.608	46.778	16.046	16.046	−42.101	0.000	0.000	0.000
	1000.00	29.354	67.661	48.716	18.945	18.945	−48.716	0.000	0.000	0.000
	1100.00	30.094	70.494	50.569	21.917	21.917	−55.625	0.000	0.000	0.000
	1200.00	30.837	73.144	52.341	24.964	24.964	−62.809	0.000	0.000	0.000
	1300.00	31.583	75.642	54.038	28.085	28.085	−70.249	0.000	0.000	0.000
	1400.00	32.329	78.010	55.666	31.281	31.281	−77.933	0.000	0.000	0.000
	1500.00	33.075	80.265	57.232	34.551	34.551	−85.847	0.000	0.000	0.000
	1600.00	33.820	82.424	58.739	37.896	37.896	−93.983	0.000	0.000	0.000
	1700.00	34.563	84.496	60.194	41.315	41.315	−102.329	0.000	0.000	0.000
	1800.00	35.305	86.493	61.600	44.808	44.808	−110.879	0.000	0.000	0.000
	1900.00	36.044	88.422	62.961	48.376	48.376	−119.626	0.000	0.000	0.000
	2000.00	36.781	90.289	64.281	52.017	52.017	−128.562	0.000	0.000	0.000
	2100.00	37.516	92.102	65.563	55.732	55.732	−137.682	0.000	0.000	0.000
	2200.00	38.248	93.864	66.809	59.520	59.520	−146.980	0.000	0.000	0.000
	2300.00	38.978	95.580	68.023	63.381	63.381	−156.453	0.000	0.000	0.000
	2400.00	39.705	97.254	69.206	67.316	67.316	−166.095	0.000	0.000	0.000
	2500.00	40.429	98.890	70.361	71.322	71.322	−175.902	0.000	0.000	0.000
	2600.00	41.151	100.490	71.489	75.401	75.401	−185.872	0.000	0.000	0.000
	2700.00	41.870	102.056	72.592	79.552	79.552	−195.999	0.000	0.000	0.000
	2716.00	41.984	102.304	72.767	80.223	80.223	−197.634	0.000	0.000	0.000
			9.623		26.137					
LIQ	2716.00	41.840	111.927	72.767	106.360	106.360	−197.634	0.000	0.000	0.000
	2800.00	41.840	113.202	73.961	109.875	109.875	−207.090	0.000	0.000	0.000
	2900.00	41.840	114.670	75.339	114.059	114.059	−218.484	0.000	0.000	0.000
	3000.00	41.840	116.088	76.674	118.243	118.243	−230.022	0.000	0.000	0.000
	3100.00	41.840	117.460	77.968	122.427	122.427	−241.700	0.000	0.000	0.000
	3200.00	41.840	118.789	79.223	126.611	126.611	−253.513	0.000	0.000	0.000
	3300.00	41.840	120.076	80.441	130.795	130.795	−265.456	0.000	0.000	0.000
	3400.00	41.840	121.325	81.625	134.979	134.979	−277.527	0.000	0.000	0.000
	3500.00	41.840	122.538	82.777	139.163	139.163	−289.720	0.000	0.000	0.000
	3600.00	41.840	123.717	83.898	143.347	143.347	−302.033	0.000	0.000	0.000
	3700.00	41.840	124.863	84.990	147.531	147.531	−314.462	0.000	0.000	0.000
	3800.00	41.840	125.979	86.054	151.715	151.715	−327.005	0.000	0.000	0.000
	3900.00	41.840	127.066	87.092	155.899	155.899	−339.657	0.000	0.000	0.000
	4000.00	41.840	128.125	88.104	160.083	160.083	−352.417	0.000	0.000	0.000
	4100.00	41.840	129.158	89.093	164.267	164.267	−365.281	0.000	0.000	0.000
	4200.00	41.840	130.166	90.059	168.451	168.451	−378.248	0.000	0.000	0.000
	4300.00	41.840	131.151	91.003	172.635	172.635	−391.314	0.000	0.000	0.000
	4400.00	41.840	132.113	91.927	176.819	176.819	−404.477	0.000	0.000	0.000
	4500.00	41.840	133.053	92.830	181.003	181.003	−417.736	0.000	0.000	0.000
	4600.00	41.840	133.973	93.715	185.187	185.187	−431.087	0.000	0.000	0.000
	4697.00	41.840	134.846	94.555	189.245	189.245	−444.125	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks
SOL	Hu1	Hu1	
LIQ	Hu1	Hu1	Hu1 BPT= 4697., L= 604.1 kJ

Ir[g] IRIDIUM (GAS) 192.220

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[–]
GAS	298.15	20.784	193.578	193.578	669.440	0.000	611.725	669.440	622.311	–109.026
	300.00	20.795	193.706	193.578	669.478	0.038	611.367	669.432	622.018	–108.303
	400.00	20.861	199.711	194.396	671.566	2.126	591.681	668.996	606.278	–79.172
	500.00	20.914	204.367	195.942	673.652	4.212	571.469	668.505	590.655	–61.705
	600.00	21.216	208.203	197.675	675.757	6.317	550.835	667.978	575.134	–50.070
	700.00	21.693	211.508	199.420	677.901	8.461	529.846	667.436	559.702	–41.765
	800.00	22.272	214.442	201.118	680.099	10.659	508.546	666.879	544.349	–35.542
	900.00	22.900	217.101	202.748	682.357	12.917	486.967	666.311	529.067	–30.706
	1000.00	23.547	219.547	204.307	684.680	15.240	465.133	665.735	513.849	–26.841
	1100.00	24.190	221.822	205.797	687.067	17.627	443.063	665.149	498.688	–23.681
	1200.00	24.817	223.953	207.222	689.517	20.077	420.773	664.553	483.582	–21.050
	1300.00	25.418	225.964	208.587	692.029	22.589	398.276	663.944	468.526	–18.826
	1400.00	25.986	227.868	209.897	694.600	25.160	375.584	663.319	453.517	–16.921
	1500.00	26.516	229.680	211.156	697.225	27.785	352.706	662.674	438.553	–15.272
	1600.00	27.006	231.407	212.368	699.902	30.462	329.651	662.006	423.633	–13.830
	1700.00	27.453	233.058	213.537	702.625	33.185	306.427	661.310	408.756	–12.560
	1800.00	27.855	234.638	214.666	705.391	35.951	283.042	660.583	393.921	–11.431
	1900.00	28.210	236.154	215.757	708.194	38.754	259.501	659.819	379.127	–10.423
	2000.00	28.519	237.609	216.814	711.031	41.591	235.813	659.014	364.374	–9.516
	2100.00	28.822	239.008	217.837	713.899	44.459	211.982	658.167	349.663	–8.697
	2200.00	29.084	240.355	218.830	716.794	47.354	188.013	657.274	334.993	–7.954
	2300.00	29.315	241.653	219.795	719.714	50.274	163.912	656.333	320.365	–7.276
	2400.00	29.518	242.905	220.732	722.656	53.216	139.684	655.341	305.779	–6.655
	2500.00	29.700	244.114	221.643	725.617	56.177	115.333	654.295	291.235	–6.085
	2600.00	29.864	245.282	222.530	728.596	59.156	90.862	653.194	276.734	–5.560
	2700.00	30.014	246.412	223.394	731.590	62.150	66.277	652.037	262.277	–5.074
	2800.00	30.150	247.506	224.235	734.598	65.158	41.581	624.723	248.671	–4.639
	2900.00	30.276	248.566	225.056	737.619	68.179	16.777	623.561	235.261	–4.238
	3000.00	30.393	249.595	225.857	740.653	71.213	–8.131	622.410	221.891	–3.863
	3100.00	30.501	250.593	226.639	743.698	74.258	–33.141	621.271	208.559	–3.514
	3200.00	30.603	251.563	227.403	746.753	77.313	–58.249	620.142	195.264	–3.187
	3300.00	30.698	252.506	228.149	749.818	80.378	–83.452	619.023	182.004	–2.881
	3400.00	30.788	253.424	228.879	752.892	83.452	–108.749	617.914	168.778	–2.593
	3500.00	30.873	254.318	229.593	755.976	86.536	–134.136	616.813	155.584	–2.322
	3600.00	30.954	255.189	230.292	759.067	89.627	–159.612	615.720	142.421	–2.066
	3700.00	31.030	256.038	230.977	762.166	92.726	–185.173	614.635	129.289	–1.825
	3800.00	31.103	256.866	231.647	765.273	95.833	–210.819	613.558	116.186	–1.597
	3900.00	31.172	257.675	232.304	768.387	98.947	–236.546	612.488	103.111	–1.381
	4000.00	31.239	258.465	232.948	771.507	102.067	–262.353	611.425	90.064	–1.176
	4100.00	31.302	259.237	233.580	774.634	105.194	–288.238	610.368	77.043	–0.982
	4200.00	31.362	259.992	234.200	777.768	108.328	–314.200	609.317	64.048	–0.797
	4300.00	31.420	260.731	234.808	780.907	111.467	–340.236	608.272	51.077	–0.620
	4400.00	31.476	261.454	235.406	784.052	114.612	–366.346	607.233	38.131	–0.453
	4500.00	31.529	262.162	235.993	787.202	117.762	–392.526	606.199	25.209	–0.293
	4600.00	31.579	262.855	236.569	790.357	120.917	–418.777	605.170	12.309	–0.140
	4700.00	31.628	263.535	237.136	793.518	124.078	–445.097	0.000	0.000	0.000
	4800.00	31.674	264.201	237.693	796.683	127.243	–471.484	0.000	0.000	0.000
	4900.00	31.719	264.855	238.240	799.852	130.412	–497.937	0.000	0.000	0.000
	5000.00	31.761	265.496	238.779	803.026	133.586	–524.455	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1

431.932

IRIDIUM TRIBROMIDE

IrBr3

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	105.450	127.612	127.612	−177.820	0.000	−215.868	−177.820	−137.210	24.039
	300.00	105.488	128.264	127.614	−177.625	0.195	−216.104	−177.881	−136.957	23.846
	400.00	107.523	158.890	131.776	−166.974	10.846	−230.530	−221.478	−114.209	14.914
	500.00	109.558	183.102	139.702	−156.120	21.700	−247.671	−218.739	−87.706	9.163
	600.00	111.593	203.256	148.661	−145.063	32.757	−267.017	−215.890	−61.765	5.377
	700.00	113.628	220.611	157.728	−133.802	44.018	−288.230	−212.919	−36.311	2.710
	800.00	115.663	235.917	166.564	−122.337	55.483	−311.071	−209.831	−11.291	0.737

References

Phase	H / S	C_p
SOL	K4	K4

298.578

IRIDIUM TRICHLORIDE

IrCl3

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	85.842	114.851	114.851	−245.601	0.000	−279.844	−245.601	−169.475	29.691
	300.00	85.935	115.382	114.852	−245.442	0.159	−280.057	−245.583	−169.002	29.426
	400.00	89.851	140.682	118.275	−236.638	8.963	−292.911	−244.503	−143.634	18.757
	500.00	92.676	161.047	124.859	−227.507	18.094	−308.030	−243.306	−118.553	12.385
	600.00	95.070	178.160	132.353	−218.117	27.484	−325.013	−242.000	−93.724	8.159
	700.00	97.261	192.981	139.979	−208.499	37.102	−343.586	−240.584	−69.121	5.158
	800.00	99.344	206.105	147.440	−198.668	46.933	−363.553	−239.066	−44.729	2.921
	900.00	101.364	217.924	154.625	−188.633	56.968	−384.764	−237.445	−20.533	1.192
	1000.00	103.345	228.706	161.502	−178.397	67.204	−407.103	−235.720	3.476	−0.182
	1100.00	105.300	238.648	168.069	−167.965	77.636	−430.477	−233.890	27.308	−1.297

References

Phase	H / S	C_p
SOL	Nb1/Be6	e

IrF6[g] IRIDIUM HEXAFLUORIDE (GAS) 306.210

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	120.856	345.390	345.390	−543.920	0.000	−646.898	−543.920	−454.922	79.700
	300.00	121.152	346.138	345.392	−543.696	0.224	−647.538	−543.916	−454.370	79.113
	400.00	133.699	382.866	350.314	−530.899	13.021	−684.046	−543.284	−424.597	55.447
	500.00	141.137	413.569	359.981	−517.126	26.794	−723.911	−542.178	−395.047	41.270
	600.00	145.717	439.738	371.148	−502.766	41.154	−766.609	−540.868	−365.741	31.841
	700.00	148.696	462.439	382.604	−488.035	55.885	−811.743	−539.475	−336.663	25.122
	800.00	150.728	482.436	393.858	−473.058	70.862	−859.007	−538.070	−307.786	20.096
	900.00	152.170	500.277	404.709	−457.909	86.011	−908.158	−536.691	−279.084	16.198
	1000.00	153.226	516.367	415.084	−442.637	101.283	−959.004	−535.358	−250.533	13.086
	1100.00	154.022	531.010	424.967	−427.273	116.647	−1011.384	−534.085	−222.112	10.547
	1200.00	154.635	544.439	434.371	−411.839	132.081	−1065.165	−532.882	−193.805	8.436
	1300.00	155.117	556.836	443.321	−396.350	147.570	−1120.237	−531.755	−165.595	6.654
	1400.00	155.502	568.346	451.845	−380.818	163.102	−1176.503	−530.707	−137.468	5.129
	1500.00	155.814	579.086	459.974	−365.252	178.668	−1233.881	−529.742	−109.414	3.810
	1600.00	156.071	589.150	467.736	−349.657	194.263	−1292.298	−528.861	−81.421	2.658
	1700.00	156.284	598.619	475.159	−334.039	209.881	−1351.691	−528.068	−53.481	1.643
	1800.00	156.462	607.557	482.269	−318.402	225.518	−1412.004	−527.361	−25.585	0.742
	1900.00	156.614	616.020	489.088	−302.748	241.172	−1473.187	−526.743	2.274	−0.063
	2000.00	156.743	624.057	495.637	−287.080	256.840	−1535.194	−526.214	30.103	−0.786

References

Phase	H / S	C_p
GAS	Nb1/Pa2	Pa2

IrI IRIDIUM MONOIODIDE 319.124

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	52.277	108.784	108.784	−46.024	0.000	−78.458	−46.024	−50.558	8.858
	300.00	52.300	109.107	108.785	−45.927	0.097	−78.659	−46.024	−50.586	8.808
	400.00	53.555	124.325	110.851	−40.635	5.389	−90.365	−54.074	−51.825	6.768
	500.00	54.810	136.410	114.795	−35.216	10.808	−103.421	−75.330	−49.224	5.142
	600.00	56.066	146.515	119.262	−29.672	16.352	−117.581	−74.293	−44.099	3.839
	700.00	57.321	155.251	123.793	−24.003	22.021	−132.679	−73.192	−39.153	2.922
	800.00	58.576	162.987	128.218	−18.208	27.816	−148.598	−72.038	−34.368	2.244

References

Phase	H / S	C_p
SOL	Ku1/e	e

446.029

IRIDIUM DIIODIDE

IrI2

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL	298.15	79.465	158.992	158.992	−83.680	0.000	−131.083	−83.680	−85.870	15.044
	300.00	79.496	159.484	158.994	−83.533	0.147	−131.378	−83.680	−85.883	14.954
	400.00	81.170	182.582	162.132	−75.500	8.180	−148.533	−99.809	−86.050	11.237
	500.00	82.843	200.875	168.113	−67.299	16.381	−167.736	−142.380	−78.527	8.204
	600.00	84.517	216.127	174.878	−58.931	24.749	−188.607	−140.394	−65.941	5.741
	700.00	86.190	229.281	181.732	−50.396	33.284	−210.892	−138.308	−53.696	4.007
	800.00	87.864	240.899	188.415	−41.693	41.987	−234.412	−136.133	−41.756	2.726

References

Phase	H / S	C_p
SOL	Ku1/e	e

224.219

IRIDIUM DIOXIDE

IrO2

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[——— J / (K mol) ———]			[——— kJ / mol ———]					[−]
SOL	298.15	59.985	58.576	58.576	−242.672	0.000	−260.136	−242.672	−188.386	33.004
	300.00	60.212	58.948	58.577	−242.561	0.111	−260.245	−242.661	−188.049	32.742
	400.00	68.505	77.560	61.058	−236.072	6.600	−267.095	−241.667	−169.976	22.197
	500.00	72.776	93.348	65.980	−228.988	13.684	−275.662	−240.220	−152.215	15.902
	600.00	75.466	106.870	71.696	−221.568	21.104	−285.690	−238.590	−134.765	11.732
	700.00	77.408	118.656	77.581	−213.919	28.753	−296.978	−236.884	−117.595	8.775
	800.00	78.952	129.096	83.380	−206.099	36.573	−309.376	−235.155	−100.671	6.573
	900.00	80.265	138.473	88.989	−198.137	44.535	−322.762	−233.424	−83.965	4.873
	1000.00	81.433	146.991	94.370	−190.051	52.621	−337.042	−231.699	−67.451	3.523
	1100.00	82.508	154.804	99.514	−181.853	60.819	−352.137	−229.983	−51.109	2.427
	1200.00	83.519	162.026	104.426	−173.551	69.121	−367.983	−228.276	−34.923	1.520
	1300.00	84.484	168.750	109.118	−165.151	77.521	−384.526	−226.580	−18.880	0.759

References

Phase	H / S	C_p
SOL	Be4	Tk1,e

IrO2[g] IRIDIUM DIOXIDE (GAS) 224.219

Phase	T	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	51.768	263.701	263.701	215.894	0.000	137.271	215.894	209.022	–36.620
	300.00	51.846	264.022	263.702	215.990	0.096	136.783	215.889	208.979	–36.387
	400.00	54.666	279.378	265.777	221.334	5.440	109.583	215.739	206.703	–26.993
	500.00	56.066	291.742	269.774	226.878	10.984	81.007	215.646	204.454	–21.359
	600.00	56.906	302.043	274.318	232.529	16.635	51.303	215.507	202.228	–17.606
	700.00	57.483	310.861	278.924	238.250	22.356	20.647	215.286	200.031	–14.927
	800.00	57.919	318.567	283.408	244.021	28.127	–10.832	214.965	197.873	–12.920
	900.00	58.273	325.410	287.701	249.831	33.937	–43.037	214.544	195.760	–11.362
	1000.00	58.576	331.565	291.785	255.674	39.780	–75.891	214.026	193.700	–10.118
	1100.00	58.846	337.161	295.660	261.545	45.651	–109.332	213.416	191.696	–9.103
	1200.00	59.094	342.292	299.335	267.443	51.549	–143.308	212.718	189.752	–8.260
	1300.00	59.325	347.031	302.824	273.364	57.470	–177.777	211.935	187.869	–7.549
	1400.00	59.545	351.436	306.141	279.307	63.413	–212.703	211.069	186.050	–6.942
	1500.00	59.757	355.551	309.299	285.272	69.378	–248.055	210.123	184.295	–6.418
	1600.00	59.962	359.414	312.312	291.258	75.364	–283.805	209.097	182.607	–5.961
	1700.00	60.162	363.056	315.191	297.265	81.371	–319.930	207.992	180.984	–5.561
	1800.00	60.358	366.500	317.946	303.291	87.397	–356.409	206.809	179.429	–5.207
	1900.00	60.551	369.769	320.589	309.336	93.442	–393.224	205.548	177.942	–4.892
	2000.00	60.741	372.879	323.126	315.401	99.507	–430.358	204.208	176.524	–4.610

References

Phase	H / S	C_p
GAS	Tk1	e

240.218

IRIDIUM TRIOXIDE (GAS) **IrO3**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	76.485	288.805	288.805	13.389	0.000	−72.718	13.389	29.614	−5.188
	300.00	76.564	289.279	288.807	13.531	0.142	−73.253	13.403	29.715	−5.174
	400.00	79.425	311.752	291.852	21.349	7.960	−103.352	14.241	35.030	−4.574
	500.00	80.843	329.643	297.682	29.370	15.981	−135.452	15.095	40.127	−4.192
	600.00	81.694	344.463	304.279	37.499	24.110	−169.179	15.855	45.060	−3.923
	700.00	82.277	357.103	310.945	45.700	32.311	−204.272	16.486	49.875	−3.722
	800.00	82.717	368.119	317.418	53.950	40.561	−240.545	16.976	54.610	−3.566
	900.00	83.073	377.883	323.604	62.240	48.851	−277.854	17.332	59.291	−3.441
	1000.00	83.379	386.652	329.478	70.563	57.174	−316.089	17.564	63.940	−3.340
	1100.00	83.650	394.612	335.043	78.915	65.526	−355.158	17.679	68.571	−3.256
	1200.00	83.899	401.901	340.315	87.292	73.903	−394.989	17.687	73.197	−3.186
	1300.00	84.131	408.626	345.314	95.694	82.305	−435.519	17.593	77.825	−3.127
	1400.00	84.352	414.869	350.062	104.118	90.729	−476.698	17.402	82.465	−3.077
	1500.00	84.564	420.696	354.579	112.564	99.175	−518.479	17.116	87.122	−3.034
	1600.00	84.770	426.160	358.884	121.031	107.642	−560.825	16.737	91.801	−2.997
	1700.00	84.970	431.305	362.994	129.518	116.129	−603.700	16.267	96.506	−2.965
	1800.00	85.166	436.167	366.925	138.025	124.636	−647.076	15.706	101.242	−2.938

References

Phase	H / S	C_p
GAS	Tk1	e

256.352

IRIDIUM DISULFIDE **IrS2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	65.889	69.036	69.036	−133.051	0.000	−153.634	−133.051	−123.933	21.713
	300.00	66.009	69.444	69.037	−132.929	0.122	−153.762	−133.059	−123.877	21.569
	400.00	70.780	89.153	71.692	−126.067	6.984	−161.728	−137.884	−120.576	15.746
	500.00	73.835	105.293	76.847	−118.828	14.223	−171.474	−141.027	−115.927	12.111
	600.00	76.215	118.972	82.756	−111.322	21.729	−182.705	−143.303	−110.673	9.635
	700.00	78.277	130.878	88.799	−103.595	29.456	−195.210	−144.883	−105.106	7.843
	800.00	80.168	141.456	94.732	−95.672	37.379	−208.836	−146.434	−99.320	6.485
	900.00	81.961	151.002	100.462	−87.565	45.486	−223.467	−253.566	−91.030	5.283
	1000.00	83.693	159.728	105.959	−79.282	53.769	−239.010	−251.852	−73.062	3.816
	1100.00	85.384	167.784	111.218	−70.828	62.223	−255.390	−250.055	−55.269	2.625
	1200.00	87.048	175.285	116.247	−62.206	70.845	−272.548	−248.176	−37.643	1.639
	1300.00	88.693	182.318	121.062	−53.419	79.632	−290.432	−246.218	−20.178	0.811
	1400.00	90.324	188.950	125.677	−44.468	88.583	−308.998	−244.181	−2.866	0.107

References

Phase	H / S	C_p
SOL	Mi1	Mi1

Ir2S3 DIIRIDIUM TRISULFIDE 480.638

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	109.295	121.336	121.336	−210.037	0.000	−246.213	−210.037	−196.369	34.403
	300.00	109.489	122.013	121.338	−209.835	0.202	−246.438	−210.053	−196.284	34.176
	400.00	117.464	154.699	125.741	−198.454	11.583	−260.333	−217.464	−191.308	24.982
	500.00	122.926	181.524	134.294	−186.422	23.615	−277.184	−222.294	−184.270	19.251
	600.00	127.399	204.341	144.114	−173.900	36.137	−296.505	−225.763	−176.309	15.349
	700.00	131.405	224.285	154.172	−160.958	49.079	−317.957	−228.122	−167.873	12.527
	800.00	135.163	242.079	164.067	−147.628	62.409	−341.291	−230.382	−159.114	10.389
	900.00	138.775	258.209	173.645	−133.930	76.107	−366.318	−390.955	−146.612	8.509
	1000.00	142.298	273.013	182.852	−119.876	90.161	−392.889	−388.204	−119.609	6.248
	1100.00	145.762	286.738	191.679	−105.472	104.565	−420.884	−385.272	−92.890	4.411
	1200.00	149.186	299.568	200.141	−90.725	119.312	−450.206	−382.162	−66.445	2.892
	1300.00	152.582	311.644	208.258	−75.636	134.401	−480.773	−378.878	−40.267	1.618
	1400.00	155.957	323.075	216.055	−60.209	149.828	−512.514	−375.419	−14.349	0.535

References

Phase	H / S	C_p
SOL	Mi1	Mi1

K POTASSIUM 39.098

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	29.278	64.670	64.670	0.000	0.000	−19.281	0.000	0.000	0.000
	300.00	29.411	64.852	64.671	0.054	0.054	−19.401	0.000	0.000	0.000
	336.35	32.025	68.362	64.881	1.171	1.171	−21.823	0.000	0.000	0.000
			6.966		2.343					
LIQ	336.35	32.141	75.328	64.881	3.514	3.514	−21.823	0.000	0.000	0.000
	400.00	31.502	80.843	66.996	5.539	5.539	−26.798	0.000	0.000	0.000
	500.00	30.698	87.782	70.488	8.647	8.647	−35.244	0.000	0.000	0.000
	600.00	30.141	93.325	73.848	11.687	11.687	−44.309	0.000	0.000	0.000
	700.00	29.830	97.945	76.969	14.683	14.683	−53.879	0.000	0.000	0.000
	800.00	29.766	101.921	79.845	17.661	17.661	−63.876	0.000	0.000	0.000
	900.00	29.948	105.435	82.497	20.644	20.644	−74.247	0.000	0.000	0.000
	1000.00	30.376	108.611	84.952	23.659	23.659	−84.952	0.000	0.000	0.000
	1039.54	30.613	109.793	85.875	24.864	24.864	−89.270	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks	
SOL	Ja2	Ja1	Ja2	MPT= 336.35
LIQ	Ja2	Ja1	Ja2	BPT=1039.54 GAS(K),L=79.556kJ / NBPT=1037.(94.5 K+5.5 K2)

39.098

POTASSIUM (GAS)

K[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	20.754	160.340	160.340	89.000	0.000	41.195	89.000	60.476	−10.595
	300.00	20.754	160.468	160.340	89.038	0.038	40.898	88.984	60.299	−10.499
	400.00	20.762	166.440	161.155	91.114	2.114	24.538	85.575	51.337	−6.704
	500.00	20.769	171.074	162.692	93.191	4.191	7.654	84.544	42.898	−4.482
	600.00	20.777	174.861	164.414	95.268	6.268	−9.649	83.581	34.660	−3.017
	700.00	20.784	178.064	166.141	97.346	8.346	−27.299	82.663	26.580	−1.983
	800.00	20.792	180.840	167.809	99.425	10.425	−45.247	81.764	18.629	−1.216
	900.00	20.800	183.290	169.396	101.505	12.505	−63.456	80.860	10.791	−0.626
	1000.00	20.807	185.482	170.897	103.585	14.585	−81.897	79.926	3.056	−0.160
	1100.00	20.815	187.465	172.314	105.666	16.666	−100.546	0.000	0.000	0.000
	1200.00	20.822	189.276	173.653	107.748	18.748	−119.384	0.000	0.000	0.000
	1300.00	20.830	190.943	174.920	109.830	20.830	−138.396	0.000	0.000	0.000
	1400.00	20.837	192.487	176.120	111.914	22.914	−157.569	0.000	0.000	0.000
	1500.00	20.845	193.925	177.260	113.998	24.998	−176.890	0.000	0.000	0.000
	1600.00	20.852	195.271	178.344	116.083	27.083	−196.350	0.000	0.000	0.000
	1700.00	20.860	196.535	179.377	118.168	29.168	−215.941	0.000	0.000	0.000
	1800.00	20.867	197.728	180.364	120.255	31.255	−235.655	0.000	0.000	0.000
	1900.00	20.875	198.856	181.308	122.342	33.342	−255.485	0.000	0.000	0.000
	2000.00	20.882	199.927	182.212	124.430	35.430	−275.424	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Ja2	Ja1

K2[g] POTASSIUM (GAS) 78.197

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	37.892	249.752	249.752	127.085	0.000	52.621	127.085	91.184	−15.975
	300.00	37.897	249.986	249.753	127.155	0.070	52.159	127.047	90.962	−15.838
	400.00	38.163	260.926	251.243	130.959	3.874	26.588	119.881	80.185	−10.471
	500.00	38.396	269.467	254.064	134.787	7.702	0.053	117.493	70.541	−7.369
	600.00	38.617	276.488	257.234	138.637	11.552	−27.255	115.264	61.362	−5.342
	700.00	38.832	282.457	260.421	142.510	15.425	−55.210	113.144	52.547	−3.921
	800.00	39.045	287.656	263.507	146.404	19.319	−83.721	111.082	44.032	−2.875
	900.00	39.255	292.267	266.452	150.319	23.234	−112.721	109.030	35.773	−2.076
	1000.00	39.464	296.414	269.244	154.255	27.170	−142.159	106.938	27.745	−1.449
	1100.00	39.672	300.185	271.888	158.211	31.126	−171.992	−53.120	29.099	−1.382
	1200.00	39.880	303.646	274.392	162.189	35.104	−202.186	−53.306	36.582	−1.592
	1300.00	40.088	306.846	276.767	166.187	39.102	−232.712	−53.473	44.080	−1.771
	1400.00	40.295	309.824	279.023	170.207	43.122	−263.547	−53.621	51.590	−1.925
	1500.00	40.502	312.611	281.170	174.246	47.161	−294.671	−53.749	59.109	−2.058
	1600.00	40.709	315.232	283.218	178.307	51.222	−326.064	−53.858	66.637	−2.175
	1700.00	40.916	317.706	285.175	182.388	55.303	−357.712	−53.948	74.171	−2.279
	1800.00	41.122	320.051	287.048	186.490	59.405	−389.601	−54.019	81.709	−2.371
	1900.00	41.329	322.280	288.844	190.613	63.528	−421.718	−54.071	89.251	−2.454
	2000.00	41.536	324.405	290.569	194.756	67.671	−454.053	−54.103	96.795	−2.528
	2100.00	41.742	326.436	292.229	198.920	71.835	−486.596	−54.116	104.341	−2.595
	2200.00	41.949	328.383	293.829	203.104	76.019	−519.338	−54.111	111.886	−2.657

References

Phase	H / S	C_p
GAS	Ja1	Ja1

KAlCl4 POTASSIUM TETRACHLOROALUMINATE 207.891

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	156.485	196.648	196.648	−1196.624	0.000	−1255.255	−1196.624	−1094.499	191.752
	300.00	156.649	197.616	196.651	−1196.334	0.290	−1255.619	−1196.559	−1093.865	190.459
	400.00	165.486	243.892	202.901	−1180.228	16.396	−1277.784	−1195.378	−1059.713	138.384
	500.00	174.324	281.768	214.995	−1163.237	33.387	−1304.121	−1191.278	−1026.257	107.212
	529.00	176.887	291.669	218.928	−1158.145	38.479	−1312.437	−1189.958	−1016.723	100.394

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1	Ja1	MPT= 529.

356.993

TRIPOTASSIUM HEXACHLOROALUMINATE **K3AICl6**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	249.037	376.560	376.560	−2092.000	0.000	−2204.271	−2092.000	−1938.430	339.605
	300.00	249.223	378.101	376.565	−2091.539	0.461	−2204.969	−2091.935	−1937.478	337.345
	400.00	259.297	451.178	386.460	−2066.113	25.887	−2246.584	−2095.871	−1885.129	246.173
	500.00	269.370	510.120	405.480	−2039.680	52.320	−2294.740	−2092.115	−1832.860	191.478
	600.00	279.444	560.123	427.188	−2012.239	79.761	−2348.313	−2087.455	−1781.432	155.087
	700.00	289.517	603.956	449.371	−1983.791	108.209	−2406.560	−2081.894	−1730.855	129.158
	800.00	299.590	643.273	471.192	−1954.336	137.664	−2468.954	−2075.489	−1681.135	109.767

References

Phase	H / S	C_p	Remarks
SOL	Ja1	Ja1	Ja1 MPT= 800.

258.267

TRIPOTASSIUM HEXAFLUOROALUMINATE **K3AIF6**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	222.798	284.512	284.512	−3326.280	0.000	−3411.107	−3326.280	−3163.443	554.222
	300.00	223.384	285.892	284.516	−3325.867	0.413	−3411.635	−3326.249	−3162.433	550.628
	400.00	241.082	352.903	293.537	−3302.533	23.747	−3443.695	−3331.516	−3106.748	405.700
	500.00	255.308	408.243	311.096	−3277.707	48.573	−3481.828	−3328.743	−3050.853	318.720
	600.00	267.399	455.900	331.349	−3251.550	74.730	−3525.089	−3324.880	−2995.621	260.792
	700.00	278.905	497.955	352.202	−3224.253	102.027	−3572.822	−3320.090	−2941.111	219.468
	800.00	290.085	535.954	372.834	−3195.783	130.497	−3624.547	−3314.374	−2887.351	188.525
	900.00	298.710	570.643	392.914	−3166.324	159.956	−3679.902	−3307.997	−2834.351	164.501
	1000.00	305.479	602.477	412.300	−3136.103	190.177	−3738.580	−3311.805	−2781.324	145.281
	1100.00	311.246	631.869	430.942	−3105.261	221.019	−3800.316	−3541.279	−2714.876	128.919
	1200.00	316.332	659.174	448.837	−3073.876	252.404	−3864.885	−3530.499	−2640.220	114.926
	1293.00	320.242	682.936	464.829	−3044.267	282.013	−3927.304	−3520.105	−2571.615	103.888

References

Phase	H / S	C_p	Remarks
SOL	Ja1	Ja1	Ja1 MPT= 1293.

KAl(SO4)2 POTASSIUM ALUMINIUM SULFATE 258.207

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	192.972	204.602	204.602	−2470.200	0.000	−2531.202	−2470.200	−2239.717	392.389
	300.00	193.932	205.798	204.605	−2469.842	0.358	−2531.582	−2470.243	−2238.287	389.720
	400.00	230.559	267.191	212.727	−2448.415	21.785	−2555.291	−2477.854	−2160.147	282.086
	500.00	251.935	321.098	229.132	−2424.217	45.983	−2584.766	−2479.445	−2080.547	217.353
	600.00	267.308	368.449	248.486	−2398.222	71.978	−2619.292	−2479.035	−2000.771	174.183
	700.00	279.847	410.622	268.691	−2370.848	99.352	−2658.284	−2477.162	−1921.195	143.361
	800.00	290.875	448.723	288.851	−2342.303	127.897	−2701.281	−2474.664	−1841.938	120.266
	900.00	301.024	483.576	308.578	−2312.702	157.498	−2747.920	−2577.270	−1760.714	102.189
	1000.00	310.629	515.792	327.708	−2282.116	188.084	−2797.908	−2581.161	−1669.579	87.210

References

Phase	H / S	C_p
SOL	Nb1	La1

KAl(SO4)2*3H2O POTASSIUM ALUMINIUM SULFATE 3−HYDRATE 312.253

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	314.320	314.001	314.001	−3381.099	0.000	−3474.718	−3381.099	−2974.600	521.138
	300.00	315.283	315.948	314.007	−3380.517	0.582	−3475.301	−3381.159	−2972.077	517.485
	400.00	352.000	412.265	326.890	−3346.949	34.150	−3511.855	−3389.804	−2834.745	370.180
	500.00	373.422	493.276	352.288	−3310.605	70.494	−3557.243	−3392.605	−2695.670	281.615

References

Phase	H / S	C_p
SOL	Nb1	e

474.390

POTASSIUM ALUMINIUM SULFATE 12–HYDRATE **KAl(SO4)2*12H2O**

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	651.878	687.398	687.398	–6061.800	0.000	–6266.748	–6061.800	–5140.728	900.634
	300.00	659.900	691.455	687.410	–6060.587	1.213	–6268.023	–6061.954	–5135.013	894.085
	364.00	937.424	845.029	701.271	–6009.472	52.328	–6317.063	–6060.976	–4937.105	708.483
			76.898		27.991					
LIQ	364.00	979.056	921.927	701.271	–5981.481	80.319	–6317.063	–6032.985	–4937.105	708.483
	400.00	979.056	1014.263	725.351	–5946.235	115.565	–6351.940	–6029.338	–4828.933	630.594
	500.00	979.056	1232.733	805.792	–5848.330	213.470	–6464.696	–6010.647	–4531.064	473.357

References

Phase	H / S	C_p	Remarks
SOL	La1	La1	La1 TPT= 57.85, L= 0.20 kJ
LIQ	La1	e	

256.214

POTASSIUM ARSENATE **K3AsO4**

Phase	T [K]	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	172.290	237.819	237.819	–1668.747	0.000	–1739.653	–1668.747	–1548.834	271.349
	300.00	172.514	238.885	237.822	–1668.428	0.319	–1740.094	–1668.745	–1548.089	269.546
	400.00	182.533	289.966	244.719	–1650.648	18.099	–1766.635	–1675.867	–1506.519	196.731
	500.00	190.477	331.573	258.054	–1631.988	36.759	–1797.774	–1675.215	–1464.242	152.968
	600.00	197.603	366.939	273.326	–1612.579	56.168	–1832.742	–1673.868	–1422.163	123.810
	700.00	204.343	397.909	288.956	–1592.480	76.267	–1871.016	–1671.945	–1380.357	103.004
	713.00	205.202	401.677	290.977	–1589.818	78.929	–1876.213	–1671.657	–1374.944	100.729

References

Phase	H / S	C_p
SOL	G1	G1

KBO2 POTASSIUM METABORATE 81.908

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	67.040	79.981	79.981	–994.955	0.000	–1018.801	–994.955	–936.617	164.091
	300.00	67.226	80.397	79.983	–994.831	0.124	–1018.950	–994.960	–936.255	163.017
	400.00	76.639	101.069	82.737	–987.622	7.333	–1028.050	–997.572	–916.196	119.643
	500.00	84.008	118.998	88.236	–979.574	15.381	–1039.073	–997.421	–895.860	93.590
	600.00	89.804	134.846	94.709	–970.873	24.082	–1051.780	–996.900	–875.591	76.227
	700.00	94.542	149.056	101.475	–961.648	33.307	–1065.988	–996.082	–855.434	63.833
	800.00	98.496	161.946	108.241	–951.990	42.965	–1081.548	–995.022	–835.412	54.547
	900.00	101.791	173.744	114.873	–941.971	52.984	–1098.340	–993.773	–815.534	47.332
	1000.00	104.463	184.612	121.310	–931.653	63.302	–1116.265	–992.394	–795.802	41.568
	1100.00	106.504	194.670	127.528	–921.099	73.856	–1135.236	–1069.887	–771.628	36.642
	1200.00	107.874	204.001	133.517	–910.375	84.580	–1155.175	–1067.382	–744.624	32.413
	1220.00	108.064	205.785	134.687	–908.215	86.740	–1159.273	–1066.877	–739.249	31.651
			25.721		31.380					
LIQ	1220.00	146.440	231.507	134.687	–876.835	118.120	–1159.273	–1035.497	–739.249	31.651
	1300.00	146.440	240.807	140.934	–865.120	129.835	–1178.170	–1030.434	–719.986	28.929
	1400.00	146.440	251.660	148.461	–850.476	144.479	–1202.800	–1024.176	–696.340	25.981
	1500.00	146.440	261.763	155.681	–835.832	159.123	–1228.477	–1017.992	–673.140	23.441
	1600.00	146.440	271.214	162.610	–821.188	173.767	–1255.131	–1011.876	–650.349	21.232
	1674.60	146.440	277.888	167.598	–810.264	184.691	–1275.614	–1007.356	–633.597	19.763

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja1	BPT= 1674.6

81.908

POTASSIUM METABORATE (GAS) **KBO2**[g]

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	59.030	297.592	297.592	−674.042	0.000	−762.769	−674.042	−680.585	119.236
	300.00	59.132	297.957	297.593	−673.933	0.109	−763.320	−674.062	−680.625	118.507
	400.00	63.985	315.665	299.974	−667.766	6.276	−794.032	−677.716	−682.177	89.083
	500.00	67.613	330.352	304.622	−661.177	12.865	−826.353	−679.025	−683.141	71.367
	600.00	70.380	342.934	309.984	−654.272	19.770	−860.032	−680.299	−683.844	59.534
	700.00	72.557	353.953	315.494	−647.121	26.921	−894.888	−681.554	−684.335	51.066
	800.00	74.296	363.760	320.926	−639.775	34.267	−930.783	−682.806	−684.647	44.703
	900.00	75.684	372.594	326.184	−632.273	41.769	−967.608	−684.076	−684.801	39.745
	1000.00	76.771	380.627	331.233	−624.648	49.394	−1005.275	−685.389	−684.812	35.771
	1100.00	77.689	387.989	336.063	−616.923	57.119	−1043.711	−765.711	−680.103	32.295
	1200.00	78.417	394.781	340.676	−609.116	64.926	−1082.854	−766.124	−672.303	29.265
	1300.00	79.008	401.082	345.084	−601.244	72.798	−1122.651	−766.559	−664.467	26.699
	1400.00	79.498	406.955	349.296	−593.318	80.724	−1163.056	−767.019	−656.596	24.498
	1500.00	79.909	412.455	353.325	−585.347	88.695	−1204.029	−767.507	−648.692	22.589
	1600.00	80.259	417.623	357.184	−577.338	96.704	−1245.536	−768.026	−640.755	20.918
	1700.00	80.560	422.498	360.884	−569.297	104.745	−1287.544	−768.579	−632.783	19.443
	1800.00	80.820	427.110	364.436	−561.228	112.814	−1330.027	−769.166	−624.779	18.131
	1900.00	81.046	431.486	367.851	−553.134	120.908	−1372.958	−769.791	−616.740	16.955
	2000.00	81.242	435.649	371.137	−545.020	129.022	−1416.317	−770.454	−608.668	15.897
	2100.00	81.412	439.617	374.305	−536.887	137.155	−1460.082	−771.158	−600.561	14.938
	2200.00	81.559	443.407	377.360	−528.738	145.304	−1504.234	−771.904	−592.420	14.066
	2300.00	81.686	447.036	380.311	−520.576	153.466	−1548.758	−772.694	−584.245	13.269
	2400.00	81.794	450.515	383.164	−512.401	161.641	−1593.636	−823.786	−574.965	12.514
	2500.00	81.885	453.855	385.926	−504.217	169.825	−1638.856	−824.744	−564.577	11.796

References

Phase	H / S	C_p
GAS	Ja1	Ja1

KBr POTASSIUM BROMIDE 119.002

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	52.306	95.939	95.939	−393.798	0.000	−422.402	−393.798	−380.430	66.650
	300.00	52.361	96.263	95.940	−393.701	0.097	−422.580	−393.825	−380.347	66.224
	400.00	54.103	111.608	98.021	−388.363	5.435	−433.006	−411.213	−372.300	48.617
	500.00	55.055	123.784	101.997	−382.905	10.893	−444.797	−410.708	−362.626	37.883
	600.00	56.242	133.920	106.496	−377.344	16.454	−457.696	−410.046	−353.069	30.737
	700.00	58.016	142.714	111.055	−371.636	22.162	−471.536	−409.203	−343.637	25.643
	800.00	60.523	150.616	115.513	−365.716	28.082	−486.209	−408.134	−334.340	21.830
	900.00	63.833	157.928	119.824	−359.505	34.293	−501.640	−406.786	−325.194	18.874
	1000.00	67.983	164.861	123.984	−352.921	40.877	−517.782	−405.099	−316.215	16.517
	1007.00	68.305	165.336	124.270	−352.444	41.354	−518.937	−404.967	−315.593	16.370
			25.345		25.522					
LIQ	1007.00	69.873	190.680	124.270	−326.922	66.876	−518.937	−379.445	−315.593	16.370
	1100.00	69.873	196.853	130.149	−320.424	73.374	−536.962	−456.496	−305.197	14.493
	1200.00	69.873	202.932	135.965	−313.437	80.361	−556.956	−453.480	−291.576	12.692
	1300.00	69.873	208.525	141.334	−306.450	87.348	−577.532	−450.468	−278.206	11.178
	1400.00	69.873	213.703	146.321	−299.462	94.336	−598.647	−447.460	−265.068	9.890
	1500.00	69.873	218.524	150.975	−292.475	101.323	−620.261	−444.455	−252.145	8.780
	1600.00	69.873	223.033	155.340	−285.488	108.310	−642.341	−441.454	−239.422	7.816
	1671.00	69.873	226.067	158.281	−280.527	113.271	−658.285	−439.325	−230.503	7.205

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja1	NBPT= 1671. GAS (KBr + K2Br2)

119.002

POTASSIUM BROMIDE (GAS) **KBr**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	36.921	250.522	250.522	−180.079	0.000	−254.772	−180.079	−212.800	37.282
	300.00	36.931	250.750	250.523	−180.011	0.068	−255.236	−180.135	−213.003	37.087
	400.00	37.316	261.433	251.976	−176.296	3.783	−280.870	−199.146	−220.163	28.750
	500.00	37.541	269.786	254.733	−172.553	7.526	−307.446	−200.356	−225.275	23.534
	600.00	37.700	276.645	257.831	−168.790	11.289	−334.777	−201.493	−230.151	20.036
	700.00	37.828	282.467	260.945	−165.014	15.065	−362.740	−202.581	−234.841	17.524
	800.00	37.939	287.526	263.958	−161.225	18.854	−391.245	−203.644	−239.377	15.630
	900.00	38.040	292.000	266.830	−157.426	22.653	−420.226	−204.707	−243.780	14.149
	1000.00	38.135	296.013	269.551	−153.617	26.462	−449.630	−205.795	−248.063	12.958
	1100.00	38.226	299.652	272.125	−149.799	30.280	−479.416	−285.871	−247.651	11.760
	1200.00	38.314	302.982	274.559	−145.972	34.107	−509.550	−286.015	−244.171	10.628
	1300.00	38.400	306.052	276.865	−142.136	37.943	−540.004	−286.155	−240.678	9.671
	1400.00	38.484	308.901	279.053	−138.292	41.787	−570.753	−286.290	−237.174	8.849
	1500.00	38.568	311.559	281.132	−134.440	45.639	−601.778	−286.420	−233.662	8.137
	1600.00	38.650	314.050	283.113	−130.579	49.500	−633.059	−286.545	−230.140	7.513
	1700.00	38.732	316.396	285.002	−126.710	53.369	−664.583	−286.666	−226.611	6.963
	1800.00	38.813	318.612	286.809	−122.832	57.247	−696.334	−286.781	−223.075	6.473
	1900.00	38.895	320.713	288.538	−118.947	61.132	−728.301	−286.892	−219.533	6.035
	2000.00	38.975	322.710	290.197	−115.053	65.026	−760.473	−286.998	−215.985	5.641

References

Phase	H / S	C_p
GAS	Ja1	Ja1

K2Br2[g] DIPOTASSIUM DIBROMIDE (GAS) 238.005

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	81.781	376.251	376.251	−540.573	0.000	−652.752	−540.573	−568.808	99.653
	300.00	81.797	376.757	376.253	−540.422	0.151	−653.449	−540.670	−568.983	99.069
	400.00	82.380	400.380	379.469	−532.209	8.364	−692.361	−577.908	−570.947	74.558
	500.00	82.652	418.795	385.561	−523.956	16.617	−733.353	−579.563	−569.012	59.444
	600.00	82.801	433.879	392.394	−515.682	24.891	−776.010	−581.088	−566.757	49.341
	700.00	82.892	446.650	399.256	−507.397	33.176	−820.052	−582.531	−564.254	42.105
	800.00	82.950	457.723	405.888	−499.105	41.468	−865.283	−583.942	−561.546	36.665
	900.00	82.991	467.495	412.201	−490.808	49.765	−911.554	−585.370	−558.662	32.424
	1000.00	83.020	476.241	418.175	−482.507	58.066	−958.748	−586.863	−555.615	29.022
	1100.00	83.041	484.155	423.819	−474.204	66.369	−1006.774	−746.348	−543.245	25.797
	1200.00	83.057	491.381	429.153	−465.899	74.674	−1055.556	−745.986	−524.797	22.844
	1300.00	83.070	498.029	434.199	−457.593	82.980	−1105.031	−745.630	−506.379	20.347
	1400.00	83.080	504.186	438.981	−449.285	91.288	−1155.146	−745.281	−487.988	18.207
	1500.00	83.088	509.918	443.521	−440.977	99.596	−1205.854	−744.938	−469.622	16.354
	1600.00	83.095	515.281	447.840	−432.668	107.905	−1257.117	−744.601	−451.279	14.733
	1700.00	83.101	520.319	451.957	−424.358	116.215	−1308.900	−744.270	−432.956	13.303
	1800.00	83.105	525.069	455.888	−416.048	124.525	−1361.171	−743.945	−414.653	12.033
	1900.00	83.109	529.562	459.648	−407.737	132.836	−1413.905	−743.627	−396.368	10.897
	2000.00	83.113	533.825	463.251	−399.426	141.147	−1467.076	−743.314	−378.099	9.875

References

Phase	H / S	C_p
GAS	Ja1	Ja1

65.116

POTASSIUM CYANIDE

KCN

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	66.345	127.779	127.779	−113.470	0.000	−151.567	−113.470	−102.010	17.872
	300.00	66.346	128.190	127.781	−113.347	0.123	−151.804	−113.444	−101.939	17.749
	400.00	66.367	147.279	130.383	−106.712	6.758	−165.623	−114.789	−97.826	12.775
	500.00	66.388	162.091	135.299	−100.074	13.396	−181.119	−114.060	−93.673	9.786
	600.00	66.408	174.196	140.803	−93.434	20.036	−197.952	−113.532	−89.649	7.805
	700.00	66.429	184.435	146.324	−86.792	26.678	−215.897	−113.186	−85.698	6.395
	800.00	66.450	193.307	151.654	−80.148	33.322	−234.794	−112.998	−81.786	5.340
	895.00	66.470	200.764	156.479	−73.835	39.635	−253.519	−112.956	−78.083	4.557
			16.362		14.644					
LIQ	895.00	75.312	217.126	156.479	−59.191	54.279	−253.519	−98.312	−78.083	4.557
	900.00	75.312	217.546	156.817	−58.814	54.656	−254.605	−98.269	−77.970	4.525
	1000.00	75.312	225.481	163.294	−51.283	62.187	−276.764	−97.491	−75.758	3.957
	1100.00	75.312	232.659	169.278	−43.752	69.718	−299.676	−175.805	−69.031	3.278
	1200.00	75.312	239.212	174.837	−36.220	77.250	−323.274	−174.275	−59.393	2.585
	1300.00	75.312	245.240	180.024	−28.689	84.781	−347.501	−172.815	−49.879	2.004
	1400.00	75.312	250.821	184.884	−21.158	92.312	−372.308	−171.414	−40.475	1.510
	1500.00	75.312	256.017	189.455	−13.627	99.843	−397.652	−170.060	−31.170	1.085
	1600.00	75.312	260.878	193.769	−6.096	107.374	−423.500	−168.747	−21.954	0.717
	1700.00	75.312	265.443	197.852	1.436	114.906	−449.818	−167.468	−12.818	0.394
	1800.00	75.312	269.748	201.728	8.967	122.437	−476.580	−166.218	−3.758	0.109
	1900.00	75.312	273.820	205.416	16.498	129.968	−503.760	−164.994	5.235	−0.144

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja1	NBPT= 1898. GAS (KCN + K2(CN)2)

KCN[g] POTASSIUM CYANIDE (GAS) 65.116

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[	J / (K mol)		] [		kJ / mol			] [−]
GAS	298.15	50.854	253.158	253.158	79.496	0.000	4.017	79.496	53.574	−9.386
	300.00	50.893	253.472	253.159	79.590	0.094	3.548	79.493	53.413	−9.300
	400.00	52.372	268.336	255.175	84.760	5.264	−22.574	76.683	45.224	−5.906
	500.00	53.465	280.142	259.028	90.053	10.557	−50.018	76.067	37.428	−3.910
	600.00	54.465	289.979	263.389	95.450	15.954	−78.537	75.352	29.766	−2.591
	700.00	55.391	298.446	267.806	100.944	21.448	−107.968	74.550	22.230	−1.659
	800.00	56.234	305.898	272.111	106.526	27.030	−138.193	73.675	14.815	−0.967
	900.00	56.988	312.566	276.242	112.188	32.692	−169.122	72.733	7.513	−0.436
	1000.00	57.651	318.605	280.181	117.920	38.424	−200.685	71.712	0.321	−0.017
	1100.00	58.227	324.128	283.929	123.715	44.219	−232.826	−8.338	−2.181	0.104
	1200.00	58.722	329.216	287.494	129.563	50.067	−265.496	−8.492	−1.615	0.070
	1300.00	59.142	333.933	290.887	135.457	55.961	−298.657	−8.670	−1.035	0.042
	1400.00	59.496	338.330	294.120	141.389	61.893	−332.272	−8.866	−0.440	0.016
	1500.00	59.794	342.445	297.206	147.354	67.858	−366.313	−9.079	0.169	−0.006
	1600.00	60.046	346.312	300.156	153.346	73.850	−400.753	−9.305	0.793	−0.026
	1700.00	60.262	349.959	302.979	159.362	79.866	−435.568	−9.542	1.431	−0.044
	1800.00	60.453	353.409	305.686	165.398	85.902	−470.738	−9.787	2.084	−0.060
	1900.00	60.630	356.682	308.284	171.452	91.956	−506.244	−10.040	2.750	−0.076
	2000.00	60.803	359.797	310.783	177.524	98.028	−542.070	−10.297	3.430	−0.090

References

Phase	H / S	C_p
GAS	Ja1	Ja1

130.232

DIPOTASSIUM DICYANIDE (GAS) **K2(CN)2**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	110.261	373.113	373.113	−8.368	0.000	−119.612	−8.368	−20.498	3.591
	300.00	110.339	373.795	373.115	−8.164	0.204	−120.303	−8.358	−20.573	3.582
	400.00	113.289	405.984	377.484	3.032	11.400	−159.362	−13.123	−23.766	3.104
	500.00	115.428	431.498	385.822	14.470	22.838	−201.279	−13.502	−26.387	2.757
	600.00	117.387	452.719	395.252	26.112	34.480	−245.519	−14.084	−28.913	2.517
	700.00	119.208	470.952	404.794	37.943	46.311	−291.724	−14.845	−31.326	2.338
	800.00	120.871	486.981	414.086	49.948	58.316	−339.637	−15.752	−33.620	2.195
	900.00	122.362	501.305	422.995	62.111	70.479	−389.063	−16.798	−35.793	2.077
	1000.00	123.676	514.267	431.484	74.415	82.783	−439.852	−18.002	−37.840	1.977
	1100.00	124.818	526.109	439.556	86.841	95.209	−491.880	−177.266	−30.590	1.453
	1200.00	125.799	537.013	447.229	99.373	107.741	−545.043	−176.737	−17.280	0.752
	1300.00	126.633	547.116	454.529	111.996	120.364	−599.256	−176.257	−4.011	0.161
	1400.00	127.338	556.527	461.482	124.695	133.063	−654.443	−175.816	9.222	−0.344
	1500.00	127.930	565.334	468.115	137.459	145.827	−710.541	−175.407	22.424	−0.781
	1600.00	128.432	573.606	474.453	150.278	158.646	−767.492	−175.025	35.600	−1.162
	1700.00	128.862	581.406	480.517	163.143	171.511	−825.246	−174.664	48.753	−1.498
	1800.00	129.243	588.782	486.328	176.049	184.417	−883.759	−174.322	61.885	−1.796
	1900.00	129.595	595.780	491.906	188.991	197.359	−942.990	−173.993	74.999	−2.062
	2000.00	129.940	602.436	497.268	201.968	210.336	−1002.904	−173.674	88.096	−2.301

References

Phase	H / S	C_p
GAS	Ja1	Ja1

K2CO3 POTASSIUM CARBONATE 138.206

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	114.235	155.519	155.519	−1150.182	0.000	−1196.550	−1150.182	−1064.529	186.501
	300.00	114.542	156.227	155.521	−1149.970	0.212	−1196.838	−1150.176	−1063.998	185.258
	400.00	128.567	191.199	160.195	−1137.781	12.401	−1214.260	−1154.449	−1034.430	135.083
	500.00	140.004	221.144	169.459	−1124.340	25.842	−1234.911	−1153.144	−1004.558	104.945
	600.00	150.423	247.601	180.318	−1109.813	40.369	−1258.373	−1151.016	−975.028	84.884
	700.00	160.362	271.539	191.666	−1094.271	55.911	−1284.348	−1148.127	−945.914	70.585
	800.00	170.044	293.587	203.045	−1077.749	72.433	−1312.618	−1144.490	−917.266	59.891
	900.00	179.577	314.166	214.261	−1060.267	89.915	−1343.017	−1140.116	−889.118	51.603
	1000.00	189.017	333.576	225.230	−1041.837	108.345	−1375.412	−1135.026	−861.496	45.000
	1100.00	198.397	352.031	235.925	−1022.465	127.717	−1409.700	−1287.123	−825.248	39.188
	1174.00	205.311	365.171	243.660	−1007.528	142.654	−1436.239	−1280.857	−794.380	35.344
			23.521		27.614					
LIQ	1174.00	209.200	388.692	243.660	−979.914	170.268	−1436.239	−1280.857	−794.380	35.344
	1200.00	209.200	393.275	246.852	−974.475	175.707	−1446.405	−1250.865	−784.244	34.137
	1300.00	209.200	410.020	258.768	−953.555	196.627	−1486.581	−1241.776	−745.729	29.964
	1400.00	209.200	425.523	270.132	−932.635	217.547	−1528.367	−1232.772	−707.909	26.412
	1500.00	209.200	439.957	280.978	−911.715	238.467	−1571.650	−1223.841	−670.731	23.357
	1600.00	209.200	453.458	291.341	−890.795	259.387	−1616.328	−1214.975	−634.147	20.703
	1700.00	209.200	466.141	301.254	−869.875	280.307	−1662.314	−1206.168	−598.115	18.378
	1800.00	209.200	478.098	310.750	−848.955	301.227	−1709.532	−1197.416	−562.600	16.326
	1900.00	209.200	489.409	319.858	−828.035	322.147	−1757.912	−1188.714	−527.570	14.504
	2000.00	209.200	500.140	328.606	−807.115	343.067	−1807.394	−1180.061	−492.997	12.876

References

Phase	H / S	C_p
SOL	Ja1	Ja1
LIQ	Ja1	Ja1

74.551 POTASSIUM CHLORIDE **KCl**

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	51.713	82.550	82.550	−436.684	0.000	−461.296	−436.684	−408.754	71.612
	300.00	51.710	82.870	82.551	−436.588	0.096	−461.449	−436.674	−408.581	71.140
	400.00	52.483	97.816	84.584	−431.391	5.293	−470.518	−438.695	−398.826	52.081
	500.00	54.209	109.702	88.457	−426.061	10.623	−480.912	−438.258	−388.904	40.629
	600.00	56.310	119.768	92.856	−420.537	16.147	−492.398	−437.592	−379.092	33.003
	700.00	58.588	128.617	97.345	−414.793	21.891	−504.826	−436.683	−369.411	27.566
	800.00	60.960	136.595	101.761	−408.817	27.867	−518.092	−435.537	−359.876	23.497
	900.00	63.387	143.915	106.043	−402.600	34.084	−532.123	−434.166	−350.499	20.342
	1000.00	65.849	150.720	110.174	−396.138	40.546	−546.858	−432.589	−341.285	17.827
	1044.00	66.939	153.579	111.944	−393.217	43.467	−553.553	−511.335	−336.966	16.859
			25.176		26.284					
LIQ	1044.00	73.597	178.755	111.944	−366.933	69.751	−553.553	−485.051	−336.966	16.859
	1100.00	73.597	182.601	115.444	−362.811	73.873	−563.672	−483.147	−329.073	15.626
	1200.00	73.597	189.004	121.311	−355.452	81.232	−582.257	−479.751	−315.216	13.721
	1300.00	73.597	194.895	126.748	−348.092	88.592	−601.456	−476.360	−301.643	12.120
	1400.00	73.597	200.349	131.812	−340.732	95.952	−621.221	−472.974	−288.330	10.758
	1500.00	73.597	205.427	136.553	−333.373	103.311	−641.513	−469.593	−275.259	9.585
	1600.00	73.597	210.177	141.007	−326.013	110.671	−662.296	−466.216	−262.414	8.567
	1700.00	73.597	214.639	145.209	−318.653	118.031	−683.539	−462.844	−249.779	7.675
	1750.00	73.597	216.772	147.223	−314.974	121.710	−694.324	−461.159	−243.537	7.269

References

Phase	H / S	C_p	Remarks
SOL	Ja1	Ja1	
LIQ	Ja1	Ja1	Ja1

NBPT= 1710. GAS (KCl + K2Cl2) / BPT= 1750. GAS (KCl)

KCl[g] POTASSIUM CHLORIDE (GAS) 74.551

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[	J / (K mol)	]	[		kJ / mol		]	[−]
GAS	298.15	36.483	239.099	239.100	−214.681	0.000	−285.969	−214.681	−233.426	40.895
	300.00	36.496	239.325	239.100	−214.613	0.068	−286.411	−214.699	−233.542	40.663
	400.00	37.000	249.902	240.539	−210.936	3.745	−310.897	−218.240	−239.205	31.237
	500.00	37.284	258.191	243.270	−207.221	7.460	−336.316	−219.418	−244.308	25.523
	600.00	37.482	265.007	246.342	−203.482	11.199	−362.486	−220.536	−249.180	21.693
	700.00	37.639	270.797	249.432	−199.726	14.955	−389.283	−221.615	−253.869	18.944
	800.00	37.774	275.832	252.424	−195.955	18.726	−416.620	−222.675	−258.404	16.872
	900.00	37.897	280.288	255.277	−192.171	22.510	−444.431	−223.737	−262.806	15.253
	1000.00	38.011	284.287	257.982	−188.376	26.305	−472.663	−224.827	−267.089	13.951
	1100.00	38.121	287.915	260.541	−184.569	30.112	−501.276	−304.904	−266.677	12.663
	1200.00	38.227	291.237	262.962	−180.752	33.929	−530.236	−305.051	−263.195	11.457
	1300.00	38.330	294.301	265.257	−176.924	37.757	−559.514	−305.192	−259.701	10.435
	1400.00	38.432	297.145	267.434	−173.086	41.595	−589.088	−305.328	−256.197	9.559
	1500.00	38.533	299.800	269.504	−169.237	45.444	−618.937	−305.458	−252.683	8.799
	1600.00	38.632	302.290	271.476	−165.379	49.302	−649.043	−305.582	−249.161	8.134
	1700.00	38.731	304.635	273.358	−161.511	53.170	−679.390	−305.701	−245.631	7.547
	1800.00	38.829	306.852	275.158	−157.633	57.048	−709.966	−305.815	−242.094	7.025
	1900.00	38.927	308.954	276.882	−153.745	60.936	−740.757	−305.923	−238.551	6.558
	2000.00	39.024	310.953	278.536	−149.848	64.833	−771.753	−306.026	−235.002	6.138
	2100.00	39.121	312.859	280.125	−145.940	68.741	−802.944	−306.123	−231.448	5.757
	2200.00	39.218	314.681	281.655	−142.023	72.658	−834.322	−306.216	−227.890	5.411
	2300.00	39.314	316.427	283.129	−138.097	76.584	−865.878	−306.304	−224.328	5.095
	2400.00	39.410	318.102	284.552	−134.161	80.520	−897.605	−306.387	−220.762	4.805
	2500.00	39.507	319.713	285.926	−130.215	84.466	−929.496	−306.465	−217.193	4.538

References

Phase	H / S	C_p
GAS	Ja1	Ja1

149.102

DIPOTASSIUM DICHLORIDE (GAS) **K2Cl2**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	80.861	352.821	352.821	−617.642	0.000	−722.835	−617.642	−617.751	108.227
	300.00	80.889	353.321	352.822	−617.492	0.150	−723.489	−617.664	−617.751	107.560
	400.00	81.862	376.744	356.009	−609.348	8.294	−760.046	−623.955	−616.662	80.528
	500.00	82.315	395.066	362.055	−601.137	16.505	−798.669	−625.531	−614.654	64.212
	600.00	82.563	410.097	368.847	−592.892	24.750	−838.950	−627.001	−612.339	53.309
	700.00	82.714	422.837	375.673	−584.627	33.015	−880.613	−628.406	−609.783	45.503
	800.00	82.813	433.888	382.274	−576.351	41.291	−923.461	−629.790	−607.028	39.635
	900.00	82.882	443.647	388.562	−568.066	49.576	−967.348	−631.198	−604.099	35.061
	1000.00	82.932	452.382	394.515	−559.775	57.867	−1012.157	−632.677	−601.010	31.394
	1100.00	82.969	460.288	400.140	−551.480	66.162	−1057.796	−792.150	−588.598	27.950
	1200.00	82.998	467.508	405.458	−543.181	74.461	−1104.191	−791.779	−570.110	24.816
	1300.00	83.020	474.153	410.490	−534.880	82.762	−1151.279	−791.417	−551.652	22.166
	1400.00	83.037	480.306	415.260	−526.577	91.065	−1199.005	−791.062	−533.222	19.895
	1500.00	83.051	486.035	419.789	−518.273	99.369	−1247.326	−790.714	−514.818	17.928
	1600.00	83.063	491.396	424.099	−509.967	107.675	−1296.200	−790.374	−496.436	16.207
	1700.00	83.071	496.432	428.207	−501.661	115.981	−1345.594	−790.042	−478.075	14.689
	1800.00	83.078	501.180	432.131	−493.353	124.289	−1395.477	−789.717	−459.733	13.341
	1900.00	83.084	505.672	435.884	−485.045	132.597	−1445.822	−789.401	−441.409	12.135
	2000.00	83.088	509.934	439.481	−476.736	140.906	−1496.604	−789.093	−423.102	11.050
	2100.00	83.091	513.988	442.933	−468.427	149.215	−1547.801	−788.794	−404.810	10.069
	2200.00	83.092	517.853	446.251	−460.118	157.524	−1599.395	−788.503	−386.532	9.177

References

Phase	H / S	C_p
GAS	Ja1	Ja1

138.549

POTASSIUM PERCHLORATE **KClO4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−1	298.15	112.400	151.042	151.042	−430.115	0.000	−475.148	−430.115	−300.277	52.607
	300.00	113.066	151.740	151.045	−429.906	0.209	−475.428	−430.101	−299.471	52.143
	400.00	138.684	188.174	155.838	−417.181	12.934	−492.450	−430.535	−255.713	33.393
	500.00	153.911	220.867	165.640	−402.501	27.614	−512.935	−426.867	−212.403	22.190
	572.85	162.272	242.375	174.050	−390.975	39.140	−529.819	−423.466	−181.386	16.539
			24.029		13.765					
SOL−2	572.85	162.272	266.404	174.050	−377.210	52.905	−529.819	−409.701	−181.386	16.539
	600.00	165.048	273.982	178.401	−372.766	57.349	−537.156	−408.309	−170.597	14.852
	700.00	174.254	300.133	193.954	−355.790	74.325	−565.883	−402.677	−131.413	9.806
	798.00	182.275	323.488	208.449	−338.314	91.801	−596.457	−396.473	−93.844	6.143

References

Phase	H / S	C_p	Remarks	
SOL−1	Ja1	Ja1	Ja1	TPT= 572.7
SOL−2	Ja1	Ja1	Ja1	MPT= 798.

K2CrO4 POTASSIUM CHROMATE 194.190

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL−A	298.15	145.979	199.995	199.995	−1403.732	0.000	−1463.361	−1403.732	−1295.421	226.952
	300.00	146.118	200.899	199.998	−1403.462	0.270	−1463.731	−1403.722	−1294.749	225.436
	400.00	153.607	243.960	205.819	−1388.476	15.256	−1486.059	−1408.076	−1257.585	164.224
	500.00	161.097	279.041	217.058	−1372.740	30.992	−1512.261	−1407.277	−1220.044	127.457
	600.00	168.586	309.074	229.948	−1356.256	47.476	−1541.701	−1405.943	−1182.713	102.964
	700.00	176.075	335.624	243.183	−1339.023	64.709	−1573.960	−1404.086	−1145.648	85.489
	800.00	183.565	359.625	256.261	−1321.041	82.691	−1608.741	−1401.709	−1108.884	72.403
	900.00	191.054	381.678	268.987	−1302.310	101.422	−1645.820	−1398.820	−1072.449	62.243
	939.00	193.975	389.844	273.838	−1294.802	108.930	−1660.866	−1397.556	−1058.333	58.873
			10.694		10.042					
SOL−B	939.00	195.677	400.538	273.838	−1284.760	118.972	−1660.866	−1387.514	−1058.333	58.873
	1000.00	198.740	412.950	281.948	−1272.730	131.002	−1685.680	−1385.338	−1037.018	54.168
	1100.00	203.761	432.127	294.739	−1252.605	151.127	−1727.945	−1539.526	−993.195	47.163
	1200.00	208.782	450.072	306.944	−1231.978	171.754	−1772.065	−1533.615	−943.787	41.082
	1246.00	211.091	457.969	312.374	−1222.321	181.411	−1792.950	−1530.812	−921.230	38.620
			26.494		33.012					
LIQ	1246.00	209.200	484.463	312.374	−1189.309	214.423	−1792.950	−1497.800	−921.230	38.620
	1300.00	209.200	493.339	319.708	−1178.012	225.720	−1819.353	−1494.612	−896.311	36.014
	1400.00	209.200	508.842	332.671	−1157.092	246.640	−1869.471	−1488.879	−850.504	31.733
	1500.00	209.200	523.275	344.902	−1136.172	267.560	−1921.085	−1483.366	−805.100	28.036
	1600.00	209.200	536.777	356.477	−1115.252	288.480	−1974.095	−1478.098	−760.055	24.813

References

Phase	H / S	C_p
SOL−A	Nb1	Nb1,e
SOL−B	Tk1	e
LIQ	Tk1	e

58.097

POTASSIUM FLUORIDE

KF

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	48.975	66.546	66.546	−568.606	0.000	−588.447	−568.606	−538.934	94.419
	300.00	49.031	66.850	66.547	−568.515	0.091	−588.570	−568.599	−538.750	93.805
	400.00	51.051	81.259	68.499	−563.502	5.104	−596.005	−570.676	−528.398	69.002
	500.00	52.696	92.828	72.244	−558.314	10.292	−604.728	−570.278	−517.871	54.102
	600.00	54.302	102.579	76.508	−552.964	15.642	−614.511	−569.704	−507.441	44.177
	700.00	55.844	111.066	80.852	−547.456	21.150	−625.202	−568.968	−497.120	37.096
	800.00	57.391	118.623	85.109	−541.795	26.811	−636.693	−568.088	−486.914	31.792
	900.00	59.097	125.478	89.219	−535.973	32.633	−648.903	−567.073	−476.827	27.674
	1000.00	61.172	131.808	93.165	−529.963	38.643	−661.771	−565.918	−466.860	24.386
	1100.00	63.852	137.758	96.951	−523.718	44.888	−675.252	−643.533	−452.432	21.484
	1130.00	64.813	139.489	98.058	−521.788	46.818	−679.411	−642.786	−447.231	20.673
			24.067		27.196					
LIQ	1130.00	66.944	163.556	98.058	−494.592	74.014	−679.411	−615.590	−447.231	20.673
	1200.00	66.944	167.580	101.997	−489.906	78.700	−691.002	−613.667	−436.860	19.016
	1300.00	66.944	172.938	107.251	−483.212	85.394	−708.032	−610.929	−422.237	16.966
	1400.00	66.944	177.899	112.122	−476.517	92.089	−725.577	−608.199	−407.824	15.216
	1500.00	66.944	182.518	116.663	−469.823	98.783	−743.600	−605.477	−393.607	13.707
	1600.00	66.944	186.839	120.915	−463.129	105.477	−762.070	−602.763	−379.571	12.392
	1700.00	66.944	190.897	124.914	−456.434	112.172	−780.959	−600.055	−365.704	11.237
	1800.00	66.944	194.723	128.687	−449.740	118.866	−800.242	−597.353	−351.997	10.215

References

Phase	H / S	C_p
SOL	Ja1	Ja1
LIQ	Ja1	Ja1

KF[g] POTASSIUM FLUORIDE (GAS) 58.097

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	35.229	226.610	226.610	–326.770	0.000	–394.334	–326.770	–344.821	60.411
	300.00	35.254	226.828	226.611	–326.705	0.065	–394.753	–326.788	–344.933	60.058
	400.00	36.245	237.122	228.008	–323.124	3.646	–417.973	–330.299	–350.366	45.753
	500.00	36.793	245.274	230.674	–319.470	7.300	–442.107	–331.434	–355.250	37.113
	600.00	37.139	252.015	233.685	–315.772	10.998	–466.981	–332.513	–359.911	31.333
	700.00	37.382	257.759	236.724	–312.046	14.724	–492.477	–333.558	–364.394	27.191
	800.00	37.567	262.763	239.673	–308.298	18.472	–518.508	–334.591	–368.729	24.076
	900.00	37.717	267.197	242.489	–304.533	22.237	–545.011	–335.634	–372.934	21.645
	1000.00	37.845	271.178	245.163	–300.755	26.015	–571.933	–336.710	–377.021	19.694
	1100.00	37.958	274.790	247.694	–296.965	29.805	–599.234	–416.780	–376.414	17.874
	1200.00	38.060	278.097	250.092	–293.164	33.606	–626.880	–416.925	–372.738	16.225
	1300.00	38.155	281.147	252.365	–289.353	37.417	–654.845	–417.070	–369.050	14.829
	1400.00	38.244	283.978	254.523	–285.533	41.237	–683.103	–417.215	–365.350	13.631
	1500.00	38.330	286.620	256.576	–281.704	45.066	–711.634	–417.359	–361.641	12.593
	1600.00	38.412	289.096	258.532	–277.867	48.903	–740.421	–417.501	–357.922	11.685
	1700.00	38.492	291.427	260.399	–274.022	52.748	–769.448	–417.642	–354.194	10.883
	1800.00	38.570	293.630	262.185	–270.169	56.601	–798.702	–417.782	–350.457	10.170
	1900.00	38.646	295.717	263.895	–266.308	60.462	–828.170	–417.920	–346.713	9.532
	2000.00	38.722	297.701	265.536	–262.440	64.330	–857.842	–418.055	–342.962	8.957

References

Phase	H / S	C_p
GAS	Ja1	Ja1

116.193

DIPOTASSIUM DIFLUORIDE (GAS) **K2F2[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	78.523	319.767	319.767	−858.557	0.000	−953.896	−858.557	−854.869	149.770
	300.00	78.577	320.253	319.768	−858.412	0.145	−954.488	−858.578	−854.847	148.842
	400.00	80.503	343.159	322.879	−850.445	8.112	−987.708	−864.794	−852.494	111.324
	500.00	81.428	361.234	328.806	−842.343	16.214	−1022.960	−866.271	−849.246	88.720
	600.00	81.942	376.129	335.488	−834.172	24.385	−1059.850	−867.653	−845.710	73.626
	700.00	82.256	388.786	342.221	−825.961	32.596	−1098.112	−868.985	−841.947	62.827
	800.00	82.462	399.784	348.744	−817.725	40.832	−1137.552	−870.310	−837.994	54.715
	900.00	82.604	409.506	354.965	−809.471	49.086	−1178.026	−871.672	−833.873	48.397
	1000.00	82.706	418.214	360.862	−801.205	57.352	−1219.419	−873.114	−829.597	43.334
	1100.00	82.782	426.101	366.440	−792.931	65.626	−1261.641	−1032.561	−816.002	38.749
	1200.00	82.840	433.306	371.717	−784.649	73.908	−1304.617	−1032.172	−796.332	34.663
	1300.00	82.885	439.939	376.713	−776.363	82.194	−1348.284	−1031.797	−776.694	31.208
	1400.00	82.920	446.083	381.451	−768.073	90.484	−1392.588	−1031.436	−757.084	28.247
	1500.00	82.949	451.805	385.953	−759.779	98.778	−1437.486	−1031.088	−737.500	25.682
	1600.00	82.972	457.159	390.238	−751.483	107.074	−1482.937	−1030.751	−717.938	23.438
	1700.00	82.991	462.189	394.324	−743.185	115.372	−1528.907	−1030.426	−698.397	21.459
	1800.00	83.007	466.934	398.227	−734.885	123.672	−1575.366	−1030.111	−678.875	19.700
	1900.00	83.021	471.422	401.962	−726.584	131.973	−1622.285	−1029.807	−659.371	18.127
	2000.00	83.032	475.681	405.543	−718.281	140.276	−1669.642	−1029.513	−639.882	16.712

References

Phase	H / S	C_p
GAS	Ja1	Ja1

40.106

POTASSIUM HYDRIDE **KH**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	37.906	50.208	50.208	−57.819	0.000	−72.789	−57.819	−34.026	5.961
	300.00	38.073	50.443	50.209	−57.749	0.070	−72.882	−57.830	−33.878	5.899
	400.00	44.140	62.313	51.787	−53.608	4.211	−78.534	−60.627	−25.372	3.313
	500.00	48.533	72.652	54.948	−48.967	8.852	−85.293	−60.554	−16.555	1.730
	600.00	51.922	81.815	58.677	−43.936	13.883	−93.025	−60.028	−7.799	0.679
	700.00	54.604	90.025	62.579	−38.607	19.212	−101.624	−59.164	0.842	−0.063

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1	Ja1	NDPT= 690.2

KH[g] POTASSIUM HYDRIDE (GAS) 40.106

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	31.050	198.029	198.029	123.010	0.000	63.968	123.010	102.730	−17.998
	300.00	31.072	198.222	198.030	123.067	0.057	63.601	122.986	102.604	−17.865
	400.00	32.654	207.369	199.266	126.251	3.241	43.303	119.233	96.465	−12.597
	500.00	34.046	214.813	201.654	129.590	6.580	22.183	118.002	90.920	−9.498
	600.00	35.051	221.114	204.386	133.047	10.037	0.379	116.955	85.605	−7.453
	700.00	35.779	226.575	207.174	136.591	13.581	−22.012	116.033	80.454	−6.004
	800.00	36.327	231.390	209.906	140.197	17.187	−44.915	115.186	75.430	−4.925
	900.00	36.753	235.694	212.537	143.852	20.842	−68.273	114.369	70.510	−4.092
	1000.00	37.097	239.585	215.050	147.545	24.535	−92.040	113.547	65.680	−3.431
	1100.00	37.384	243.135	217.444	151.269	28.259	−116.179	33.744	65.519	−3.111
	1200.00	37.630	246.398	219.723	155.021	32.011	−140.657	33.874	68.402	−2.977
	1300.00	37.846	249.419	221.892	158.795	35.785	−165.450	34.005	71.274	−2.864
	1400.00	38.039	252.231	223.960	162.589	39.579	−190.534	34.134	74.136	−2.766
	1500.00	38.215	254.861	225.934	166.402	43.392	−215.890	34.259	76.989	−2.681
	1600.00	38.378	257.333	227.820	170.232	47.222	−241.501	34.378	79.834	−2.606
	1700.00	38.530	259.664	229.625	174.077	51.067	−267.352	34.491	82.671	−2.540
	1800.00	38.673	261.871	231.356	177.937	54.927	−293.430	34.598	85.502	−2.481
	1900.00	38.810	263.965	233.017	181.811	58.801	−319.723	34.699	88.328	−2.428
	2000.00	38.942	265.959	234.615	185.699	62.689	−346.220	34.794	91.148	−2.381
	2100.00	39.069	267.862	236.153	189.600	66.590	−372.912	34.883	93.963	−2.337
	2200.00	39.192	269.683	237.636	193.513	70.503	−399.789	34.967	96.775	−2.298
	2300.00	39.311	271.428	239.068	197.438	74.428	−426.846	35.047	99.582	−2.262
	2400.00	39.429	273.103	240.451	201.375	78.365	−454.073	35.122	102.386	−2.228
	2500.00	39.543	274.715	241.790	205.323	82.313	−481.464	35.194	105.188	−2.198

References

Phase	H / S	C_p
GAS	Ja1	Ja1

136.086

POTASSIUM DIHYDROGEN PHOSPHATE **KH2PO4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL−2	298.15	116.570	134.850	134.850	−1568.331	0.000	−1608.537	−1568.331	−1415.719	248.028
	300.00	117.134	135.573	134.853	−1568.115	0.216	−1608.787	−1568.375	−1414.772	246.334
	400.00	138.297	172.525	139.747	−1555.220	13.111	−1624.230	−1573.064	−1362.659	177.945
	444.00	144.193	187.271	143.733	−1549.000	19.331	−1632.149	−1573.333	−1339.498	157.586
			10.365		4.602					
SOL−1	444.00	144.193	197.636	143.733	−1544.398	23.933	−1632.149	−1568.731	−1339.498	157.586
	500.00	150.185	215.126	150.763	−1536.149	32.182	−1643.712	−1568.775	−1310.580	136.915
	600.00	158.422	243.272	163.886	−1520.699	47.632	−1666.663	−1568.246	−1258.979	109.604
	700.00	164.935	268.197	177.041	−1504.522	63.809	−1692.260	−1567.144	−1207.515	90.106
	800.00	170.529	290.594	189.859	−1487.743	80.588	−1720.218	−1565.602	−1156.240	75.495
	900.00	175.589	310.976	202.200	−1470.433	97.898	−1750.311	−1563.694	−1105.181	64.143
	1000.00	180.318	329.723	214.028	−1452.636	115.695	−1782.359	−1561.471	−1054.351	55.074

References

Phase	H / S	C_p	Remarks	
SOL−2	Nb1,Tk1	Tk1,e		
SOL−1	Tk1	Tk1,e	Tk1	TPT= 483./ 498./ 580./ 670.

174.176

DIPOTASSIUM HYDROGEN PHOSPHATE **K2HPO4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL−2	298.15	141.294	179.075	179.075	−1775.773	0.000	−1829.164	−1775.773	−1636.546	286.716
	300.00	141.954	179.951	179.078	−1775.511	0.262	−1829.496	−1775.799	−1635.682	284.798
	400.00	166.623	224.590	184.997	−1759.936	15.837	−1849.772	−1781.839	−1587.766	207.341
	500.00	180.268	263.355	196.885	−1742.538	33.235	−1874.216	−1780.870	−1539.332	160.813
	593.00	189.005	294.865	209.831	−1725.348	50.425	−1900.203	−1779.017	−1494.557	131.649

References

Phase	H / S	C_p	Remarks	
SOL−2	Tk1	Tk1,e	Tk1	TPT= 593.

KI — POTASSIUM IODIDE — 166.003

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	52.780	106.387	106.387	−327.900	0.000	−359.619	−327.900	−323.024	56.592
	300.00	52.803	106.713	106.388	−327.802	0.098	−359.816	−327.907	−322.994	56.238
	400.00	53.934	122.059	108.472	−322.465	5.435	−371.289	−338.874	−320.548	41.859
	500.00	55.357	134.238	112.448	−317.005	10.895	−384.124	−360.618	−313.868	32.790
	600.00	57.309	144.495	116.955	−311.376	16.524	−398.073	−359.905	−304.581	26.516
	700.00	59.770	153.508	121.545	−305.526	22.374	−412.982	−358.933	−295.433	22.045
	800.00	62.641	161.673	126.058	−299.408	28.492	−428.747	−357.679	−286.444	18.703
	900.00	65.793	169.231	130.440	−292.988	34.912	−445.296	−356.133	−277.629	16.113
	954.00	67.562	173.115	132.746	−289.388	38.512	−454.540	−355.177	−272.947	14.945
			25.174		24.016					
LIQ	954.00	72.383	198.289	132.746	−265.372	62.528	−454.540	−355.177	−272.947	14.945
	1000.00	72.383	201.698	135.840	−262.042	65.858	−463.740	−330.094	−270.165	14.112
	1100.00	72.383	208.597	142.146	−254.804	73.096	−484.261	−406.761	−259.699	12.332
	1200.00	72.383	214.895	147.950	−247.566	80.334	−505.440	−403.505	−246.473	10.729
	1300.00	72.383	220.689	153.325	−240.327	87.573	−527.223	−400.253	−233.519	9.383
	1400.00	72.383	226.053	158.331	−233.089	94.811	−549.563	−397.005	−220.815	8.239
	1500.00	72.383	231.047	163.014	−225.851	102.049	−572.421	−393.761	−208.343	7.255
	1600.00	72.383	235.718	167.414	−218.612	109.288	−595.762	−390.520	−196.088	6.402
	1618.00	72.383	236.528	168.178	−217.309	110.591	−600.012	−389.938	−193.904	6.260

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja1	NBPT= 1618., GAS (KI + K2I2)

166.003

POTASSIUM IODIDE (GAS) **KI**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	37.121	258.262	258.262	−125.520	0.000	−202.521	−125.520	−165.926	29.069
	300.00	37.129	258.492	258.263	−125.451	0.069	−202.999	−125.556	−166.176	28.934
	400.00	37.438	269.220	259.724	−121.721	3.799	−229.409	−138.130	−178.668	23.332
	500.00	37.628	277.596	262.491	−117.968	7.552	−256.765	−161.581	−186.509	19.485
	600.00	37.769	284.469	265.598	−114.197	11.323	−284.879	−162.726	−191.386	16.662
	700.00	37.887	290.300	268.721	−110.414	15.106	−313.625	−163.821	−196.076	14.631
	800.00	37.993	295.366	271.742	−106.620	18.900	−342.914	−164.891	−200.611	13.099
	900.00	38.091	299.847	274.621	−102.816	22.704	−372.678	−165.960	−205.012	11.899
	1000.00	38.185	303.865	277.348	−99.002	26.518	−402.868	−167.054	−209.292	10.932
	1100.00	38.276	307.509	279.926	−95.179	30.341	−433.439	−247.136	−208.877	9.919
	1200.00	38.365	310.843	282.366	−91.347	34.173	−464.359	−247.287	−205.392	8.940
	1300.00	38.452	313.917	284.676	−87.506	38.014	−495.599	−247.432	−201.895	8.112
	1400.00	38.538	316.770	286.868	−83.657	41.863	−527.135	−247.573	−198.387	7.402
	1500.00	38.624	319.432	288.951	−79.799	45.721	−558.947	−247.709	−194.869	6.786
	1600.00	38.709	321.927	290.935	−75.932	49.588	−591.016	−247.840	−191.342	6.247
	1700.00	38.793	324.277	292.828	−72.057	53.463	−623.327	−247.967	−187.807	5.771
	1800.00	38.877	326.496	294.637	−68.174	57.346	−655.867	−248.089	−184.265	5.347
	1900.00	38.961	328.601	296.370	−64.282	61.238	−688.623	−248.206	−180.716	4.968
	2000.00	39.045	330.601	298.032	−60.381	65.139	−721.584	−248.318	−177.161	4.627

References

Phase	H / S	C_p
GAS	Ja1	Ja1

K2I2[g] DIPOTASSIUM DIIODIDE (GAS) 332.006

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	82.256	395.916	395.916	−422.166	0.000	−540.208	−422.166	−467.018	81.820
	300.00	82.267	396.425	395.917	−422.014	0.152	−540.941	−422.223	−467.296	81.363
	400.00	82.648	420.151	399.150	−413.765	8.401	−581.826	−446.582	−480.343	62.726
	500.00	82.825	438.615	405.264	−405.491	16.675	−624.798	−492.717	−484.286	50.593
	600.00	82.922	453.725	412.120	−397.203	24.963	−669.438	−494.260	−482.453	42.001
	700.00	82.981	466.512	419.000	−388.908	33.258	−715.466	−495.721	−480.369	35.846
	800.00	83.018	477.595	425.647	−380.608	41.558	−762.684	−497.148	−478.078	31.215
	900.00	83.045	487.375	431.973	−372.304	49.862	−810.942	−498.593	−475.608	27.604
	1000.00	83.063	496.126	437.959	−363.999	58.167	−860.125	−500.103	−472.975	24.706
	1100.00	83.077	504.043	443.612	−355.692	66.474	−910.139	−659.605	−461.016	21.892
	1200.00	83.087	511.272	448.954	−347.384	74.782	−960.910	−659.262	−442.977	19.282
	1300.00	83.096	517.923	454.007	−339.074	83.092	−1012.375	−658.926	−424.967	17.075
	1400.00	83.102	524.082	458.795	−330.765	91.401	−1064.479	−658.596	−406.983	15.185
	1500.00	83.107	529.815	463.341	−322.454	99.712	−1117.177	−658.274	−389.022	13.547
	1600.00	83.111	535.179	467.665	−314.143	108.023	−1170.429	−657.959	−371.082	12.115
	1700.00	83.115	540.218	471.786	−305.832	116.334	−1224.202	−657.651	−353.161	10.851
	1800.00	83.118	544.968	475.721	−297.520	124.646	−1278.463	−657.350	−335.259	9.729
	1900.00	83.120	549.462	479.485	−289.208	132.958	−1333.187	−657.056	−317.373	8.725
	2000.00	83.122	553.726	483.091	−280.896	141.270	−1388.348	−656.770	−299.502	7.822

References

Phase	H / S	C_p
GAS	Ja1	Ja1

KNO3 POTASSIUM NITRATE 101.103

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	96.401	133.051	133.051	−494.628	0.000	−534.297	−494.628	−394.705	69.151
	300.00	96.621	133.648	133.053	−494.449	0.179	−534.544	−494.612	−394.085	68.616
	400.00	108.499	163.071	136.985	−484.193	10.435	−549.422	−495.756	−360.288	47.049
	401.20	108.642	163.396	137.063	−484.063	10.565	−549.618	−495.735	−359.882	46.855
			12.722		5.104					
SOL−B	401.20	120.499	176.118	137.063	−478.959	15.669	−549.618	−490.631	−359.882	46.855
	500.00	120.499	202.646	147.498	−467.054	27.574	−568.377	−487.783	−328.010	34.267
	600.00	120.499	224.615	158.575	−455.004	39.624	−589.773	−485.004	−296.319	25.797
	607.60	120.499	226.132	159.411	−454.088	40.540	−591.486	−484.797	−293.930	25.269
			15.838		9.623					
LIQ	607.60	123.386	241.970	159.411	−444.465	50.163	−591.486	−475.174	−293.930	25.269
	700.00	123.386	259.437	171.489	−433.064	61.564	−614.670	−472.464	−266.566	19.891

References

Phase	H / S	C_p	Remarks	
SOL−A	Nb1	La1	La1	TPT= 401.05
SOL−B	La1	La1	La1	MPT= 607.3
LIQ	La1	La1		

55.098

POTASSIUM MONOXIDE (GAS) **KO[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	35.981	238.179	238.179	71.128	0.000	0.115	71.128	49.979	−8.756
	300.00	36.001	238.402	238.180	71.195	0.067	−0.326	71.113	49.847	−8.679
	400.00	36.782	248.878	239.603	74.838	3.710	−24.713	67.787	43.347	−5.661
	500.00	37.222	257.137	242.313	78.540	7.412	−50.028	66.851	37.347	−3.902
	600.00	37.513	263.950	245.368	82.278	11.150	−76.093	65.969	31.529	−2.745
	700.00	37.730	269.750	248.447	86.040	14.912	−102.785	65.108	25.857	−1.930
	800.00	37.905	274.800	251.432	89.822	18.694	−130.018	64.244	20.309	−1.326
	900.00	38.056	279.273	254.282	93.620	22.492	−157.726	63.355	14.870	−0.863
	1000.00	38.191	283.290	256.985	97.433	26.305	−185.857	62.423	9.533	−0.498
	1100.00	38.316	286.936	259.545	101.258	30.130	−214.371	−17.514	8.875	−0.421
	1200.00	38.434	290.275	261.968	105.096	33.968	−243.234	−17.532	11.275	−0.491
	1300.00	38.547	293.356	264.266	108.945	37.817	−272.418	−17.557	13.677	−0.550
	1400.00	38.656	296.217	266.447	112.805	41.677	−301.898	−17.587	16.081	−0.600
	1500.00	38.762	298.887	268.522	116.676	45.548	−331.655	−17.621	18.487	−0.644
	1600.00	38.866	301.392	270.499	120.557	49.429	−361.670	−17.658	20.895	−0.682
	1700.00	38.969	303.751	272.386	124.449	53.321	−391.928	−17.698	23.306	−0.716
	1800.00	39.070	305.982	274.191	128.351	57.223	−422.416	−17.740	25.719	−0.746
	1900.00	39.170	308.097	275.920	132.263	61.135	−453.121	−17.785	28.134	−0.773
	2000.00	39.269	310.108	277.580	136.185	65.057	−484.032	−17.832	30.552	−0.798

References

Phase	H / S	C_p
GAS	Ja1	Ja1

71.097

POTASSIUM DIOXIDE **KO2**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	77.490	122.591	122.591	−284.512	0.000	−321.063	−284.512	−240.617	42.155
	300.00	77.650	123.071	122.593	−284.368	0.144	−321.290	−284.477	−240.344	41.848
	400.00	83.909	146.359	125.725	−276.258	8.254	−334.802	−284.823	−225.481	29.445
	500.00	87.630	165.512	131.825	−267.668	16.844	−350.424	−282.399	−210.918	22.034
	600.00	90.157	181.726	138.825	−258.771	25.741	−367.807	−279.702	−196.872	17.139
	700.00	91.952	195.767	145.979	−249.661	34.851	−386.698	−276.843	−183.291	13.677
	782.00	93.016	206.013	151.746	−242.075	42.437	−403.177	−274.430	−172.468	11.520

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1	Ja1	TPT= 193.5 / 230.9, MPT= 782.

K2O — POTASSIUM OXIDE — 94.196

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	74.417	102.006	102.006	−361.498	0.000	−391.911	−361.498	−322.766	56.547
	300.00	74.511	102.467	102.007	−361.360	0.138	−392.100	−361.496	−322.526	56.157
	400.00	79.054	124.558	104.988	−353.670	7.828	−403.493	−366.260	−308.635	40.304
	500.00	82.227	142.560	110.758	−345.597	15.901	−416.877	−365.932	−294.258	30.741
	600.00	84.627	157.772	117.358	−337.250	24.248	−431.913	−365.245	−279.982	24.375
	700.00	86.709	170.976	124.095	−328.682	32.816	−448.365	−364.297	−265.844	19.838
	800.00	88.686	182.684	130.700	−319.912	41.586	−466.058	−363.151	−251.855	16.444
	900.00	90.626	193.242	137.072	−310.946	50.552	−484.863	−361.855	−238.020	13.814
	1000.00	92.524	202.889	143.178	−301.788	59.710	−504.676	−360.456	−224.334	11.718
	1013.00	92.765	204.085	143.952	−300.583	60.915	−507.322	−360.269	−222.566	11.476
			26.851		27.200					
LIQ	1013.00	107.000	230.936	143.952	−273.383	88.115	−507.322	−333.069	−222.566	11.476
	1100.00	107.000	239.752	151.185	−264.074	97.424	−527.802	−488.512	−204.010	9.688
	1200.00	107.000	249.063	158.960	−253.374	108.124	−552.249	−483.750	−178.356	7.764
	1300.00	107.000	257.627	166.224	−242.674	118.824	−577.590	−479.007	−153.099	6.152
	1400.00	107.000	265.557	173.040	−231.974	129.524	−603.754	−474.280	−128.207	4.783
	1500.00	107.000	272.939	179.457	−221.274	140.224	−630.683	−469.569	−103.652	3.609
	1600.00	107.000	279.845	185.517	−210.574	150.924	−658.326	−464.872	−79.410	2.592
	1700.00	107.000	286.331	191.259	−199.874	161.624	−686.638	−460.189	−55.462	1.704
	1800.00	107.000	292.447	196.712	−189.174	172.324	−715.580	−455.520	−31.790	0.923
	1900.00	107.000	298.233	201.904	−178.474	183.024	−745.116	−450.864	−8.376	0.230
	2000.00	107.000	303.721	206.859	−167.774	193.724	−775.216	−446.221	14.793	−0.386

References

Phase	H / S	C_p	Remarks	
SOL	Nb1	Pa1	Tk1	TPT= 590., 645., 719.
LIQ	Tk1	e		

K2O2 — DIPOTASSIUM PEROXIDE — 110.195

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	95.838	110.081	110.081	−495.386	0.000	−528.207	−495.386	−428.479	75.068
	300.00	95.971	110.674	110.083	−495.209	0.177	−528.411	−495.372	−428.064	74.533
	400.00	104.338	139.441	113.947	−485.189	10.197	−540.965	−499.292	−404.845	52.867
	500.00	110.915	163.458	121.513	−474.413	20.973	−556.142	−497.791	−381.392	39.844
	600.00	116.825	184.204	130.270	−463.026	32.360	−573.548	−495.643	−358.304	31.193
	683.00	121.542	199.644	137.776	−453.130	42.256	−589.487	−493.421	−339.449	25.960

References

Phase	H / S	C_p	Remarks	
SOL	Pa1	Pa1	Pa1	MPT= 683.

158.163 KALIOPHILITE **KAlSiO4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	119.790	133.101	133.101	−2121.301	0.000	−2160.985	−2121.301	−2005.333	351.326
	300.00	119.914	133.843	133.104	−2121.079	0.222	−2161.232	−2121.324	−2004.614	349.034
	400.00	126.615	169.258	137.887	−2108.753	12.548	−2176.456	−2125.054	−1965.058	256.610
	500.00	133.317	198.231	147.141	−2095.756	25.545	−2194.872	−2126.203	−1924.920	201.095
	600.00	140.018	223.130	157.777	−2082.089	39.212	−2215.967	−2127.027	−1884.580	164.067
	700.00	146.720	245.217	168.719	−2067.753	53.548	−2239.404	−2127.511	−1844.129	137.611
	800.00	153.421	265.246	179.552	−2052.745	68.556	−2264.942	−2127.666	−1803.632	117.765
	900.00	160.123	283.704	190.112	−2037.068	84.233	−2292.401	−2127.533	−1763.133	102.330
	1000.00	166.824	300.921	200.341	−2020.721	100.580	−2321.642	−2137.678	−1721.904	89.943
	1100.00	173.526	317.135	210.228	−2003.703	117.598	−2352.552	−2215.516	−1675.792	79.577
	1200.00	180.227	332.521	219.784	−1986.016	135.285	−2385.041	−2212.882	−1626.838	70.814
	1300.00	186.929	347.212	229.025	−1967.658	153.643	−2419.033	−2209.690	−1578.127	63.410
	1400.00	193.630	361.310	237.974	−1948.630	172.671	−2454.464	−2205.930	−1529.682	57.073
	1500.00	200.332	374.898	246.652	−1928.932	192.369	−2491.278	−2201.598	−1481.526	51.591

References

Phase	H / S	C_p
SOL	Nb1	e

218.247 LEUCITE **KAlSi2O6**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	164.140	199.999	199.999	−3034.199	0.000	−3093.829	−3034.199	−2871.401	503.058
	300.00	164.330	201.015	200.003	−3033.895	0.304	−3094.200	−3034.232	−2870.391	499.780
	400.00	174.579	249.694	206.571	−3016.950	17.249	−3116.827	−3038.436	−2815.052	367.608
	500.00	184.828	289.751	219.312	−2998.979	35.220	−3143.855	−3039.949	−2759.022	288.233
	600.00	195.077	324.355	233.997	−2979.984	54.215	−3174.597	−3040.980	−2702.731	235.294
	700.00	205.326	355.196	249.146	−2959.964	74.235	−3208.601	−3041.485	−2646.308	197.470
	800.00	215.576	383.283	264.182	−2938.919	95.280	−3245.545	−3041.447	−2589.851	169.100
	900.00	225.825	409.266	278.876	−2916.849	117.350	−3285.188	−3040.888	−2533.430	147.036
	1000.00	236.074	433.589	293.144	−2893.754	140.445	−3327.343	−3050.357	−2476.339	129.351
	1100.00	246.323	456.570	306.965	−2869.634	164.565	−3371.861	−3127.257	−2414.446	114.652
	1200.00	256.572	478.442	320.351	−2844.489	189.710	−3418.620	−3123.414	−2349.808	102.284
	1300.00	266.821	499.384	333.323	−2818.320	215.879	−3467.518	−3118.735	−2285.525	91.834
	1400.00	277.070	519.532	345.908	−2791.125	243.074	−3518.470	−3113.206	−2221.634	82.890
	1500.00	287.319	538.998	358.135	−2762.906	271.293	−3571.402	−3106.818	−2158.168	75.154

References

Phase	H / S	C_p
SOL	Nb1	e

KAlSi3O8 MICROCLINE 278.332

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL−M	298.15	202.381	214.221	214.221	−3968.101	0.000	−4031.971	−3968.101	−3742.768	655.717
	300.00	203.770	215.477	214.225	−3967.725	0.376	−4032.368	−3968.153	−3741.370	651.430
	400.00	253.927	281.921	222.943	−3944.510	23.591	−4057.278	−3971.181	−3665.125	478.616
	500.00	279.219	341.566	240.831	−3917.733	50.368	−4088.517	−3969.226	−3588.802	374.920
	600.00	294.724	393.941	262.078	−3888.983	79.118	−4125.348	−3966.038	−3513.003	305.834
	700.00	305.608	440.232	284.287	−3858.940	109.161	−4167.102	−3962.223	−3437.792	256.531
	800.00	314.029	481.610	306.412	−3827.943	140.158	−4213.231	−3958.079	−3363.153	219.591
	900.00	321.018	519.012	327.990	−3796.181	171.920	−4263.292	−3953.795	−3289.044	190.891
	1000.00	327.118	553.156	348.824	−3763.769	204.332	−4316.925	−3960.017	−3214.656	167.916
	1100.00	332.636	584.597	368.847	−3730.777	237.324	−4373.833	−4034.210	−3135.764	148.905
	1200.00	337.759	613.762	388.056	−3697.254	270.847	−4433.768	−4028.238	−3054.349	132.952
	1300.00	342.604	640.990	406.477	−3663.234	304.867	−4496.521	−4022.033	−2973.441	119.474
	1400.00	347.246	666.550	424.150	−3628.740	339.361	−4561.911	−4015.601	−2893.020	107.940
	1500.00	351.738	690.662	441.121	−3593.790	374.311	−4629.783	−4008.949	−2813.067	97.960

References

Phase	H / S	C_p
SOL−M	Nb1	S5,Nb1

KAlSi3O8[A] ADULARIA 278.332

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL−A	298.15	190.461	234.304	234.304	−3954.089	0.000	−4023.947	−3954.089	−3734.744	654.312
	300.00	191.849	235.486	234.308	−3953.735	0.354	−4024.381	−3954.163	−3733.382	650.040
	400.00	242.007	298.501	242.558	−3931.712	22.377	−4051.112	−3958.383	−3658.960	477.811
	500.00	267.299	355.487	259.564	−3906.128	47.961	−4083.871	−3957.620	−3584.156	374.434
	600.00	282.804	405.688	279.822	−3878.570	75.519	−4121.982	−3955.624	−3509.637	305.541
	700.00	293.688	450.141	301.040	−3849.718	104.371	−4164.817	−3953.001	−3435.507	256.361
	800.00	302.109	489.928	322.208	−3819.913	134.176	−4211.855	−3950.049	−3361.778	219.502
	900.00	309.098	525.926	342.875	−3789.343	164.746	−4262.676	−3946.957	−3288.429	190.855
	1000.00	315.197	558.814	362.848	−3758.123	195.966	−4316.937	−3954.371	−3214.668	167.917
	1100.00	320.716	589.118	382.058	−3726.323	227.766	−4374.353	−4029.757	−3136.284	148.930
	1200.00	325.839	617.246	400.499	−3693.993	260.096	−4434.688	−4024.976	−3055.268	132.992
	1300.00	330.684	643.520	418.194	−3661.165	292.924	−4497.741	−4019.963	−2974.661	119.523
	1400.00	335.326	668.197	435.179	−3627.863	326.226	−4563.339	−4014.724	−2894.448	107.993
	1500.00	339.818	691.486	451.497	−3594.104	359.985	−4631.334	−4009.263	−2814.618	98.014

References

Phase	H / S	C_p
SOL−A	S5	S5

278.332

SANIDINE **KAlSi3O8**[S]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−S	298.15	204.511	232.881	232.881	−3959.700	0.000	−4029.134	−3959.700	−3739.931	655.220
	300.00	205.899	234.151	232.885	−3959.320	0.380	−4029.566	−3959.748	−3738.567	650.942
	400.00	256.057	301.207	241.687	−3935.892	23.808	−4056.375	−3962.563	−3664.222	478.498
	500.00	281.349	361.328	259.733	−3908.903	50.797	−4089.567	−3960.395	−3589.852	375.029
	600.00	296.854	414.091	281.157	−3879.940	79.760	−4128.394	−3956.995	−3516.049	306.099
	700.00	307.738	460.710	303.543	−3849.683	110.017	−4172.180	−3952.966	−3442.870	256.910
	800.00	316.159	502.373	325.839	−3818.473	141.227	−4220.371	−3948.609	−3370.294	220.058
	900.00	323.148	540.025	347.579	−3786.498	173.202	−4272.521	−3944.112	−3298.274	191.427
	1000.00	329.247	574.394	368.567	−3753.873	205.827	−4328.267	−3950.121	−3225.998	168.509
	1100.00	334.766	606.037	388.736	−3720.668	239.032	−4387.309	−4024.102	−3149.240	149.545
	1200.00	339.889	635.388	408.082	−3686.933	272.767	−4449.398	−4017.916	−3069.978	133.633
	1300.00	344.733	662.786	426.632	−3652.700	307.000	−4514.322	−4011.498	−2991.242	120.190
	1400.00	349.376	688.505	444.428	−3617.993	341.707	−4581.899	−4004.854	−2913.009	108.686
	1473.00	352.667	706.346	456.969	−3592.368	367.332	−4632.816	−3999.864	−2856.204	101.285
			41.755		61.505					
LIQ	1473.00	382.836	748.101	456.969	−3530.863	428.837	−4632.816	−3938.359	−2856.204	101.285
	1500.00	382.836	755.055	462.273	−3520.526	439.174	−4653.109	−3935.685	−2836.393	98.772
	1600.00	382.836	779.763	481.352	−3482.243	477.457	−4729.863	−3925.926	−2763.426	90.217
	1700.00	382.836	802.972	499.595	−3443.959	515.741	−4809.012	−4066.921	−2689.723	82.645
	1800.00	382.836	824.854	517.063	−3405.675	554.025	−4890.413	−4056.921	−2609.000	75.711
	1900.00	382.836	845.553	533.812	−3367.392	592.308	−4973.943	−4047.016	−2528.831	69.522
	2000.00	382.836	865.190	549.894	−3329.108	630.592	−5059.489	−4037.205	−2449.180	63.966

References

Phase	H / S	C_p
SOL−S	Nb1	S5,e
LIQ	S5	S5

$KAl_3Si_3O_{10}(OH)_2$ MUSCOVITE 398.308

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	318.260	306.298	306.298	–5984.400	0.000	–6075.723	–5984.400	–5608.368	982.563
	300.00	319.937	308.272	306.304	–5983.810	0.590	–6076.291	–5984.489	–5606.034	976.097
	400.00	382.679	409.973	319.745	–5948.308	36.092	–6112.298	–5989.093	–5478.974	715.481
	500.00	417.563	499.411	346.937	–5908.163	76.237	–6157.869	–5988.091	–5351.514	559.069
	600.00	441.482	577.765	379.017	–5865.151	119.249	–6211.810	–5985.400	–5224.430	454.827
	700.00	460.223	647.273	412.468	–5820.036	164.364	–6273.127	–5981.694	–5097.883	380.409
	800.00	476.205	709.794	445.790	–5773.198	211.202	–6341.032	–5977.340	–4971.916	324.633
	900.00	490.582	766.725	478.333	–5724.848	259.552	–6414.900	–5972.629	–4846.519	281.285
	1000.00	503.963	819.112	509.826	–5675.114	309.286	–6494.226	–5999.348	–4719.381	246.515
	1100.00	516.693	867.746	540.180	–5624.077	360.323	–6578.598	–6071.903	–4587.102	217.823
	1200.00	528.980	913.234	569.392	–5571.790	412.610	–6667.671	–6063.691	–4452.477	193.811
	1300.00	540.954	956.049	597.504	–5518.291	466.109	–6761.155	–6054.644	–4318.570	173.522
	1400.00	552.702	996.569	624.574	–5463.607	520.793	–6858.804	–6044.763	–4185.391	156.159
	1500.00	564.282	1035.098	650.669	–5407.757	576.643	–6960.403	–6034.050	–4052.948	141.136

References

Phase	H / S	C_p
SOL	Nb1	e

233.436

DIPOTASSIUM TETRABORATE **K2B4O7**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	170.308	208.363	208.363	−3334.230	0.000	−3396.353	−3334.230	−3136.762	549.548
	300.00	171.170	209.419	208.366	−3333.914	0.316	−3396.740	−3334.297	−3135.536	545.945
	400.00	207.154	264.008	215.565	−3314.853	19.377	−3420.456	−3342.063	−3067.897	400.626
	500.00	231.238	312.969	230.242	−3292.867	41.363	−3449.351	−3343.921	−2999.120	313.316
	600.00	249.041	356.778	247.747	−3268.811	65.419	−3482.878	−3344.926	−2930.053	255.084
	700.00	262.488	396.227	266.188	−3243.203	91.027	−3520.562	−3345.322	−2860.870	213.481
	800.00	272.382	431.960	284.712	−3216.432	117.798	−3562.000	−3345.318	−2791.659	182.277
	900.00	279.108	464.460	302.907	−3188.832	145.398	−3606.846	−3345.133	−2722.462	158.008
	1000.00	282.868	494.087	320.566	−3160.709	173.521	−3654.796	−3345.004	−2653.285	138.593
	1088.00	283.815	517.999	335.581	−3135.759	198.471	−3699.342	−3503.263	−2585.065	124.108
			95.756		104.182					
LIQ	1088.00	464.529	613.755	335.581	−3031.577	302.653	−3699.342	−3399.342	−2585.065	124.108
	1100.00	465.456	618.855	338.644	−3025.997	308.233	−3706.738	−3396.710	−2576.100	122.329
	1200.00	473.178	659.686	363.716	−2979.065	355.165	−3770.689	−3376.718	−2502.378	108.926
	1300.00	480.900	697.866	387.967	−2931.361	402.869	−3838.587	−3356.286	−2430.342	97.652
	1400.00	488.622	733.787	411.398	−2882.885	451.345	−3910.187	−3335.381	−2359.897	88.049
	1500.00	496.344	767.762	434.033	−2833.637	500.593	−3985.280	−3313.982	−2290.963	79.778
	1600.00	504.066	800.041	455.908	−2783.617	550.613	−4063.683	−3292.070	−2223.474	72.589
	1700.00	511.788	830.832	477.064	−2732.824	601.406	−4145.238	−3269.635	−2157.370	66.288
	1800.00	519.510	860.304	497.542	−2681.259	652.971	−4229.805	−3246.667	−2092.603	60.726
	1900.00	527.232	888.599	517.384	−2628.922	705.308	−4317.260	−3223.159	−2029.127	55.785
	2000.00	534.954	915.839	536.630	−2575.813	758.417	−4407.490	−3199.105	−1966.903	51.370

References

Phase	H / S	C_p
SOL	Ja1	Ja1
LIQ	Ja1	Ja1

303.057

DIPOTASSIUM HEXABORATE **K2B6O10**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL	298.15	261.928	251.040	251.040	−4633.529	0.000	−4708.377	−4633.529	−4353.562	762.726
	300.00	262.331	252.661	251.045	−4633.044	0.485	−4708.843	−4633.550	−4351.824	757.720
	400.00	285.758	331.316	261.611	−4605.647	27.882	−4738.173	−4640.166	−4256.764	555.876
	500.00	308.325	397.530	282.335	−4575.932	57.597	−4774.697	−4642.345	−4160.659	434.661
	600.00	330.038	455.670	306.471	−4544.010	89.519	−4817.412	−4644.185	−4064.140	353.815
	700.00	351.520	508.160	331.592	−4509.931	123.598	−4865.643	−4645.302	−3967.365	296.048
	800.00	372.791	556.491	356.721	−4473.713	159.816	−4918.906	−4645.422	−3870.496	252.717
	900.00	393.448	601.601	381.451	−4435.393	198.136	−4976.834	−4644.390	−3773.680	219.019
	1000.00	412.845	644.074	405.609	−4395.065	238.464	−5039.138	−4642.174	−3677.042	192.069
	1100.00	430.195	684.255	429.131	−4352.892	280.637	−5105.573	−4796.743	−3571.512	169.597

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1	Ja1	DPT= 1098.

$K_2B_8O_{13}$ DIPOTASSIUM OCTABORATE 372.677

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	321.382	293.717	293.717	–5945.129	0.000	–6032.701	–5945.129	–5582.662	978.059
	300.00	322.105	295.707	293.723	–5944.534	0.595	–6033.246	–5945.164	–5580.413	971.636
	400.00	360.344	393.641	306.818	–5910.400	34.729	–6067.856	–5952.229	–5457.597	712.689
	500.00	397.708	478.073	332.801	–5872.493	72.636	–6111.529	–5954.265	–5333.686	557.206
	600.00	434.728	553.860	363.427	–5830.869	114.260	–6163.185	–5955.104	–5209.466	453.524
	700.00	471.585	623.643	395.676	–5785.553	159.576	–6222.102	–5954.175	–5085.239	379.465
	800.00	501.402	688.616	428.281	–5736.861	208.268	–6287.754	–5951.394	–4961.275	323.938
	900.00	525.091	749.091	460.607	–5685.493	259.636	–6359.675	–5947.186	–4837.750	280.776
	1000.00	544.619	805.455	492.306	–5631.980	313.149	–6437.435	–5941.903	–4714.754	246.273
	1100.00	561.426	858.168	523.196	–5576.660	368.469	–6520.645	–6093.647	–4583.161	217.636
	1130.00	566.077	873.337	532.291	–5559.747	385.382	–6546.618	–6091.045	–4542.001	209.956
			110.710		125.102					
LIQ	1130.00	661.490	984.047	532.291	–5434.645	510.484	–6546.618	–5965.943	–4542.001	209.956
	1200.00	661.490	1023.805	559.815	–5388.340	556.789	–6616.907	–5953.271	–4454.179	193.885
	1300.00	661.490	1076.753	597.570	–5322.191	622.938	–6721.970	–5935.708	–4329.971	173.980

References

Phase	H / S	C_p
SOL	Ja1	Ja1
LIQ	Ja1	Ja1

56.106

POTASSIUM HYDROXIDE

KOH

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	64.897	78.910	78.910	−424.676	0.000	−448.203	−424.676	−378.858	66.374
	300.00	65.008	79.312	78.911	−424.556	0.120	−448.349	−424.664	−378.574	65.916
	400.00	71.672	98.897	81.537	−417.732	6.944	−457.291	−426.263	−362.867	47.386
	500.00	79.580	115.716	86.724	−410.180	14.496	−468.038	−424.810	−347.170	36.269
	516.00	80.960	118.244	87.662	−408.896	15.780	−469.910	−424.499	−344.690	34.893
			12.486		6.443					
SOL−B	516.00	78.659	130.731	87.662	−402.453	22.223	−469.910	−418.056	−344.690	34.893
	600.00	78.659	142.594	94.543	−395.845	28.831	−481.402	−416.559	−332.862	28.978
	679.00	78.659	152.324	100.712	−389.631	35.045	−493.059	−415.157	−321.931	24.766
			12.694		8.619					
LIQ	679.00	83.107	165.017	100.712	−381.012	43.664	−493.059	−406.538	−321.931	24.766
	700.00	83.107	167.549	102.679	−379.267	45.409	−496.551	−406.074	−319.321	23.828
	800.00	83.107	178.646	111.497	−370.956	53.720	−513.873	−403.886	−307.078	20.050
	900.00	83.107	188.435	119.512	−362.646	62.030	−532.237	−401.749	−295.106	17.127
	1000.00	83.107	197.191	126.850	−354.335	70.341	−551.526	−399.685	−283.368	14.802
	1100.00	83.107	205.112	133.610	−346.024	78.652	−571.647	−476.656	−267.248	12.691
	1200.00	83.107	212.343	139.874	−337.714	86.962	−592.525	−473.740	−248.340	10.810
	1300.00	83.107	218.995	145.708	−329.403	95.273	−614.097	−470.864	−229.674	9.228
	1400.00	83.107	225.154	151.166	−321.092	103.584	−636.308	−468.026	−211.227	7.881
	1500.00	83.107	230.888	156.292	−312.782	111.894	−659.113	−465.224	−192.983	6.720
	1594.00	83.107	235.939	160.841	−304.970	119.706	−681.057	−462.622	−176.002	5.768

References

Phase	H / S	C_p	Remarks	
SOL−A	Ja1	Ja1		
SOL−B	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja1	BPT= 1594., L= 142.7 kJ, GAS (KOH)

KOH[g] POTASSIUM HYDROXIDE (GAS) 56.106

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	48.524	236.380	236.380	−232.630	0.000	−303.107	−232.630	−233.762	40.954
	300.00	48.590	236.680	236.381	−232.540	0.090	−303.544	−232.648	−233.769	40.703
	400.00	50.808	251.011	238.320	−227.554	5.076	−327.958	−236.085	−233.534	30.496
	500.00	51.879	262.474	242.043	−222.414	10.216	−353.651	−237.044	−232.783	24.319
	600.00	52.599	271.999	246.264	−217.189	15.441	−380.388	−237.903	−231.849	20.184
	700.00	53.190	280.153	250.537	−211.899	20.731	−408.006	−238.706	−230.776	17.221
	800.00	53.730	287.291	254.694	−206.553	26.077	−436.385	−239.482	−229.590	14.991
	900.00	54.248	293.649	258.676	−201.154	31.476	−465.438	−240.257	−228.307	13.251
	1000.00	54.755	299.391	262.465	−195.703	36.927	−495.095	−241.053	−226.937	11.854
	1100.00	55.253	304.633	266.063	−190.203	42.427	−525.300	−320.834	−220.900	10.490
	1200.00	55.742	309.462	269.481	−184.653	47.977	−556.008	−320.680	−211.822	9.220
	1300.00	56.218	313.943	272.731	−179.055	53.575	−587.180	−320.516	−202.757	8.147
	1400.00	56.676	318.126	275.826	−173.410	59.220	−618.786	−320.343	−193.705	7.227
	1500.00	57.112	322.051	278.778	−167.720	64.910	−650.797	−320.163	−184.666	6.431
	1600.00	57.520	325.750	281.599	−161.989	70.641	−683.189	−319.975	−175.639	5.734
	1700.00	57.893	329.249	284.300	−156.218	76.412	−715.940	−319.782	−166.624	5.120
	1800.00	58.227	332.567	286.890	−150.411	82.219	−749.033	−319.587	−157.620	4.574
	1900.00	58.515	335.723	289.378	−144.574	88.056	−782.448	−319.393	−148.628	4.086
	2000.00	58.751	338.731	291.771	−138.710	93.920	−816.172	−319.203	−139.645	3.647

References

Phase	H / S	C_p
GAS	Ja1	Ja1

112.211

DIPOTASSIUM DIHYDROXIDE (GAS)

K2(OH)2[g]

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	81.465	328.135	328.135	–654.796	0.000	–752.629	–654.796	–613.940	107.560
	300.00	81.574	328.639	328.137	–654.645	0.151	–753.237	–654.861	–613.686	106.852
	400.00	88.170	353.003	331.414	–646.160	8.636	–787.361	–663.223	–598.514	78.158
	500.00	93.983	373.325	337.817	–637.042	17.754	–823.705	–666.302	–581.968	60.798
	600.00	98.647	390.887	345.231	–627.402	27.394	–861.935	–668.831	–564.856	49.175
	700.00	102.450	406.389	352.882	–617.342	37.454	–901.814	–670.955	–547.354	40.844
	800.00	105.621	420.282	360.454	–606.933	47.863	–943.159	–672.792	–529.568	34.577
	900.00	108.309	432.882	367.812	–596.233	58.563	–985.827	–674.439	–511.565	29.690
	1000.00	110.606	444.416	374.904	–585.285	69.511	–1029.700	–675.984	–493.384	25.772
	1100.00	112.653	455.055	381.713	–574.120	80.676	–1074.680	–835.383	–465.882	22.123
	1200.00	114.481	464.937	388.242	–562.761	92.035	–1120.686	–834.815	–432.316	18.818
	1300.00	116.113	474.166	394.500	–551.230	103.566	–1167.646	–834.153	–398.800	16.024
	1400.00	117.570	482.825	400.503	–539.545	115.251	–1215.500	–833.411	–365.339	13.631
	1500.00	118.875	490.982	406.266	–527.721	127.075	–1264.194	–832.605	–331.933	11.559
	1600.00	120.045	498.692	411.804	–515.774	139.022	–1313.682	–831.746	–298.582	9.748
	1700.00	121.096	506.002	417.132	–503.716	151.080	–1363.920	–830.845	–265.287	8.151
	1800.00	122.040	512.951	422.263	–491.559	163.237	–1414.870	–829.910	–232.046	6.734
	1900.00	122.886	519.572	427.212	–479.312	175.484	–1466.499	–828.949	–198.857	5.467
	2000.00	123.643	525.895	431.989	–466.984	187.812	–1518.775	–827.970	–165.720	4.328

References

Phase	H / S	C_p
GAS	Ja1	Ja1

K2SiO3 POTASSIUM METASILICATE 154.280

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	118.431	146.147	146.147	−1548.080	0.000	−1591.654	−1548.080	−1455.733	255.038
	300.00	118.801	146.881	146.149	−1547.861	0.219	−1591.925	−1548.088	−1455.160	253.366
	400.00	135.564	183.485	151.027	−1535.097	12.983	−1608.491	−1552.872	−1423.255	185.858
	500.00	148.112	215.145	160.755	−1520.885	27.195	−1628.458	−1551.744	−1390.957	145.312
	600.00	157.737	243.039	172.191	−1505.571	42.509	−1651.395	−1549.625	−1358.985	118.310
	700.00	164.851	267.905	184.121	−1489.431	58.649	−1676.965	−1546.809	−1327.426	99.054
	800.00	170.708	290.314	196.017	−1472.643	75.437	−1704.894	−1543.490	−1296.307	84.640
	900.00	175.309	310.699	207.644	−1455.331	92.749	−1734.960	−1539.815	−1265.627	73.455
	1000.00	179.075	329.382	218.897	−1437.595	110.485	−1766.977	−1535.909	−1235.370	64.529
	1100.00	182.002	346.588	229.734	−1419.541	128.539	−1800.787	−1689.789	−1196.340	56.809
	1200.00	184.933	362.550	240.145	−1401.193	146.887	−1836.253	−1683.627	−1151.752	50.134
	1249.00	186.262	369.978	245.093	−1392.098	155.982	−1854.201	−1680.539	−1130.096	47.262
			40.199		50.208					
LIQ	1249.00	179.912	410.177	245.093	−1341.890	206.190	−1854.201	−1630.331	−1130.096	47.262
	1300.00	179.912	417.377	251.712	−1332.715	215.365	−1875.305	−1627.431	−1109.728	44.589
	1400.00	179.912	430.710	264.027	−1314.724	233.356	−1917.718	−1621.810	−1070.116	39.927
	1500.00	179.912	443.123	275.558	−1296.732	251.348	−1961.417	−1616.273	−1030.903	35.899
	1600.00	179.912	454.734	286.397	−1278.741	269.339	−2006.316	−1610.818	−992.057	32.387
	1700.00	179.912	465.641	296.624	−1260.750	287.330	−2052.340	−1655.619	−953.103	29.285
	1800.00	179.912	475.925	306.302	−1242.759	305.321	−2099.423	−1650.094	−911.938	26.464
	1900.00	179.912	485.652	315.488	−1224.768	323.312	−2147.506	−1644.606	−871.079	23.948
	2000.00	179.912	494.880	324.228	−1206.776	341.304	−2196.537	−1639.154	−830.508	21.691
	2100.00	179.912	503.658	332.565	−1188.785	359.295	−2246.467	−1633.738	−790.209	19.655
	2200.00	179.912	512.028	340.534	−1170.794	377.286	−2297.255	−1628.358	−750.167	17.811
	2300.00	179.912	520.025	348.165	−1152.803	395.277	−2348.861	−1623.012	−710.370	16.133
	2400.00	179.912	527.682	355.487	−1134.812	413.268	−2401.249	−1617.702	−670.803	14.600
	2500.00	179.912	535.027	362.523	−1116.820	431.260	−2454.387	−1612.425	−631.458	13.194

References

Phase	H / S	C_p
SOL	Ja1,S5	Ja1
LIQ	Ja1	Ja1

214.365

POTASSIUM DISILICATE

$K_2Si_2O_5$

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−C	298.15	180.673	182.004	182.004	−2509.145	0.000	−2563.409	−2509.145	−2360.713	413.587
	300.00	180.945	183.122	182.007	−2508.811	0.334	−2563.747	−2509.129	−2359.792	410.876
	400.00	195.669	237.194	189.281	−2489.980	19.165	−2584.857	−2512.940	−2309.244	301.556
	500.00	210.392	282.438	203.501	−2469.677	39.468	−2610.896	−2511.058	−2258.514	235.945
	523.00	213.779	291.975	207.183	−2464.799	44.346	−2617.502	−2510.461	−2246.910	224.410
			0.000		0.000					
SOL−B	523.00	217.991	291.975	207.183	−2464.799	44.346	−2617.502	−2510.461	−2246.910	224.410
	600.00	226.062	322.457	220.054	−2447.703	61.442	−2641.177	−2507.816	−2208.289	192.249
	700.00	236.542	358.092	237.274	−2424.573	84.572	−2675.237	−2503.713	−2158.681	161.083
	800.00	247.023	390.362	254.424	−2400.394	108.751	−2712.684	−2498.849	−2109.714	137.750
	900.00	257.504	420.062	271.199	−2375.168	133.977	−2753.224	−2493.226	−2061.402	119.641
	1000.00	267.985	447.736	287.484	−2348.893	160.252	−2796.629	−2486.853	−2013.756	105.188
	1100.00	278.466	473.769	303.247	−2321.571	187.574	−2842.717	−2637.629	−1957.616	92.959
	1200.00	288.947	498.448	318.494	−2293.200	215.945	−2891.338	−2627.693	−1896.228	82.541
	1300.00	299.428	521.990	333.249	−2263.781	245.364	−2942.368	−2616.881	−1835.705	73.760
	1318.00	301.315	526.120	335.855	−2258.375	250.770	−2951.801	−2614.840	−1824.903	72.324
			31.110		41.003					
LIQ	1318.00	263.592	557.230	335.855	−2217.372	291.773	−2951.801	−2573.837	−1824.903	72.324
	1400.00	263.592	573.140	349.291	−2195.757	313.388	−2998.153	−2567.624	−1778.497	66.357
	1500.00	263.592	591.326	364.828	−2169.398	339.747	−3056.387	−2560.185	−1722.392	59.979
	1600.00	263.592	608.338	379.521	−2143.039	366.106	−3116.379	−2552.895	−1666.777	54.415
	1700.00	263.592	624.318	393.456	−2116.680	392.465	−3178.020	−2646.103	−1610.721	49.491
	1800.00	263.592	639.384	406.704	−2090.320	418.825	−3241.212	−2638.646	−1550.032	44.981
	1900.00	263.592	653.636	419.329	−2063.961	445.184	−3305.870	−2631.249	−1489.755	40.956
	2000.00	263.592	667.157	431.385	−2037.602	471.543	−3371.915	−2623.911	−1429.866	37.344

References

Phase	H / S	C_p
SOL−C	S5	S5
SOL−B	u	S5
LIQ	S5	S5

K2Si4O9 — POTASSIUM TETRASILICATE — 334.533

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	300.731	265.684	265.684	−4315.796	0.000	−4395.010	−4315.796	−4058.762	711.078
	300.00	301.026	267.545	265.690	−4315.239	0.557	−4395.503	−4315.741	−4057.167	706.416
	400.00	316.963	356.328	277.687	−4284.340	31.456	−4426.871	−4317.670	−3970.503	518.494
	500.00	332.900	428.768	300.869	−4251.847	63.949	−4466.231	−4314.274	−3884.087	405.768
	600.00	348.837	490.871	327.478	−4217.760	98.036	−4512.283	−4309.991	−3798.436	330.683
	700.00	364.774	545.842	354.818	−4182.079	133.717	−4564.169	−4304.744	−3713.578	277.111
	800.00	380.711	595.591	381.852	−4144.805	170.991	−4621.278	−4298.476	−3629.541	236.985
	865.00	391.069	625.730	399.056	−4119.722	196.074	−4660.979	−4293.833	−3575.371	215.905
			3.725		3.222					
SOL−B	865.00	405.378	629.455	399.056	−4116.500	199.296	−4660.979	−4290.611	−3575.371	215.905
	900.00	405.944	645.546	408.330	−4102.302	213.494	−4683.293	−4287.509	−3546.492	205.833
	1000.00	407.563	688.400	434.231	−4061.627	254.169	−4750.027	−4278.878	−3464.623	180.973
	1043.00	408.260	705.574	445.066	−4044.087	271.709	−4780.000	−4434.292	−3429.204	171.739
			46.935		48.953					
LIQ	1043.00	410.032	752.508	445.066	−3995.134	320.662	−4780.000	−4385.339	−3429.204	171.739
	1100.00	410.032	774.326	461.567	−3971.762	344.034	−4823.520	−4379.441	−3377.110	160.366
	1200.00	410.032	810.003	489.139	−3930.759	385.037	−4902.762	−4369.368	−3286.436	143.055
	1300.00	410.032	842.823	515.100	−3889.755	426.041	−4985.426	−4359.621	−3196.590	128.441
	1400.00	410.032	873.210	539.607	−3848.752	467.044	−5071.246	−4350.179	−3107.482	115.942
	1500.00	410.032	901.499	562.801	−3807.749	508.047	−5159.998	−4341.029	−3019.039	105.132
	1600.00	410.032	927.962	584.806	−3766.746	549.050	−5251.485	−4332.160	−2931.197	95.694
	1700.00	410.032	952.820	605.730	−3725.743	590.053	−5345.537	−4524.275	−2842.114	87.328
	1800.00	410.032	976.257	625.670	−3684.739	631.057	−5442.002	−4515.044	−2743.430	79.612

References

Phase	H / S	C_p
SOL−A	S5	S5
SOL−B	S5	S5
LIQ	S5	S5

K3PO4 — POTASSIUM PHOSPHATE — 212.266

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	164.851	211.710	211.710	−1988.237	0.000	−2051.358	−1988.237	−1858.940	325.679
	300.00	165.151	212.731	211.714	−1987.932	0.305	−2051.751	−1988.247	−1858.138	323.531
	400.00	178.299	262.161	218.364	−1970.718	17.519	−2075.583	−1996.681	−1813.142	236.772
	500.00	188.359	303.061	231.328	−1952.371	35.866	−2103.901	−1996.408	−1767.267	184.625
	600.00	197.206	338.197	246.278	−1933.086	55.151	−2136.004	−1995.194	−1721.539	149.873
	700.00	205.478	369.223	261.667	−1912.948	75.289	−2171.404	−1993.188	−1676.078	125.070
	800.00	213.445	397.183	276.887	−1892.000	96.237	−2209.747	−1990.480	−1630.953	106.490
	900.00	221.234	422.774	291.694	−1870.265	117.972	−2250.762	−1987.139	−1586.207	92.061

References

Phase	H / S	C_p	Remarks	
SOL	Tk1	e	Tk1	TPT= 538., 833., 1328., 1353. / MPT= 1913

110.263

POTASSIUM SULFIDE

K2S

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−1	298.15	74.682	115.060	115.060	−376.560	0.000	−410.865	−376.560	−362.745	63.551
	300.00	74.730	115.522	115.061	−376.422	0.138	−411.078	−376.573	−362.659	63.145
	400.00	77.315	137.374	118.023	−368.820	7.740	−423.769	−384.521	−356.895	46.606
	500.00	79.915	154.905	123.702	−360.958	15.602	−438.411	−386.777	−349.742	36.537
	600.00	82.522	169.706	130.167	−352.837	23.723	−454.660	−388.311	−342.176	29.789
	700.00	85.131	182.623	136.757	−344.454	32.106	−472.290	−389.231	−334.409	24.954
	800.00	87.742	194.161	143.224	−335.810	40.750	−491.139	−389.903	−326.530	21.320
	900.00	103.621	204.998	149.480	−326.594	49.966	−511.092	−442.860	−317.429	18.423
	1000.00	155.974	218.324	155.664	−313.900	62.660	−532.224	−438.030	−303.704	15.864
	1050.00	195.021	226.844	158.845	−305.161	71.399	−543.347	−592.145	−295.544	14.703
			0.000		0.000					
SOL−2	1050.00	194.974	226.844	158.845	−305.161	71.399	−543.347	−592.145	−295.544	14.703
	1100.00	142.340	234.699	162.125	−296.728	79.832	−554.897	−586.715	−281.558	13.370
	1200.00	142.340	247.084	168.696	−282.494	94.066	−578.995	−578.493	−254.179	11.064
	1221.00	142.340	249.554	170.066	−279.505	97.055	−584.210	−576.767	−248.519	10.632
			13.227		16.150					
LIQ	1221.00	100.960	262.780	170.066	−263.355	113.205	−584.210	−560.617	−248.519	10.632
	1300.00	100.960	269.110	175.894	−255.379	121.181	−605.222	−557.397	−228.428	9.178
	1400.00	100.960	276.592	182.823	−245.283	131.277	−632.512	−553.327	−203.275	7.584
	1500.00	100.960	283.557	189.309	−235.187	141.373	−660.524	−549.263	−178.413	6.213
	1600.00	100.960	290.073	195.405	−225.091	151.469	−689.209	−545.205	−153.823	5.022
	1700.00	100.960	296.194	201.156	−214.995	161.565	−718.525	−541.153	−129.485	3.979
	1800.00	100.960	301.965	206.598	−204.899	171.661	−748.436	−537.106	−105.386	3.058
	1900.00	100.960	307.423	211.762	−194.803	181.757	−778.908	−533.065	−81.512	2.241
	2000.00	100.960	312.602	216.675	−184.707	191.853	−809.911	−529.029	−57.851	1.511

References

Phase	H / S	C_p
SOL−1	Ja1	Ja1,Dw3
SOL−2	Ja1	Ja1,Dw3
LIQ	Ja1,Dw3	Ja1

K2SO3 POTASSIUM SULFITE 158.261

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	123.430	171.544	171.544	−1126.751	0.000	−1177.897	−1126.751	−1038.030	181.859
	300.00	123.583	172.308	171.546	−1126.523	0.228	−1178.215	−1126.755	−1037.479	180.641
	400.00	131.867	208.995	176.493	−1113.750	13.001	−1197.348	−1133.989	−1006.689	131.460
	500.00	140.151	239.310	186.107	−1100.149	26.602	−1219.804	−1135.095	−974.742	101.831
	600.00	148.436	265.595	197.210	−1085.720	41.031	−1245.077	−1135.060	−942.653	82.065
	700.00	156.720	289.099	208.686	−1070.462	56.289	−1272.831	−1133.987	−910.659	67.954
	800.00	165.004	310.567	220.098	−1054.376	72.375	−1302.829	−1132.222	−878.868	57.384
	900.00	173.289	330.480	231.269	−1037.461	89.290	−1334.893	−1182.589	−846.184	49.111

References

Phase	H / S	C_p
SOL	Tk1	Tk1,e

174.260 POTASSIUM SULFATE **K2SO4**

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	131.193	175.561	175.561	−1437.790	0.000	−1490.133	−1437.790	−1319.684	231.203
	300.00	131.584	176.373	175.563	−1437.547	0.243	−1490.459	−1437.806	−1318.951	229.650
	400.00	147.904	216.611	180.939	−1423.521	14.269	−1510.166	−1445.273	−1278.246	166.922
	500.00	160.164	250.992	191.594	−1408.091	29.699	−1533.587	−1446.079	−1236.394	129.165
	600.00	170.519	281.107	204.054	−1391.558	46.232	−1560.222	−1445.520	−1194.485	103.989
	700.00	184.553	308.349	217.032	−1373.868	63.922	−1589.712	−1443.642	−1152.776	86.021
	800.00	211.057	334.528	230.082	−1354.233	83.557	−1621.856	−1439.997	−1111.445	72.570
	857.00	235.736	349.845	237.535	−1341.540	96.250	−1641.358	−1436.576	−1088.147	66.323
			9.862		8.452					
SOL−B	857.00	183.994	359.708	237.535	−1333.088	104.702	−1641.358	−1428.124	−1088.147	66.323
	900.00	187.489	368.800	243.590	−1325.101	112.689	−1657.021	−1479.849	−1069.965	62.099
	1000.00	195.617	388.975	257.131	−1305.946	131.844	−1694.921	−1475.481	−1024.650	53.522
	1100.00	203.745	408.000	269.989	−1285.978	151.812	−1734.778	−1628.389	−970.634	46.092
	1200.00	211.873	426.077	282.249	−1265.197	172.593	−1776.489	−1620.718	−911.171	39.662
	1300.00	220.001	443.357	293.982	−1243.603	194.187	−1819.967	−1612.309	−852.379	34.249
	1342.00	223.415	450.406	298.768	−1234.291	203.499	−1838.736	−1608.556	−827.887	32.224
			25.627		34.392					
LIQ	1342.00	201.460	476.034	298.768	−1199.899	237.891	−1838.736	−1574.164	−827.887	32.224
	1400.00	201.460	484.558	306.290	−1188.215	249.575	−1866.595	−1570.173	−795.718	29.689
	1500.00	201.460	498.457	318.643	−1168.069	269.721	−1915.754	−1563.341	−740.639	25.791
	1600.00	201.460	511.459	330.292	−1147.923	289.867	−1966.257	−1556.568	−686.013	22.396
	1700.00	201.460	523.672	341.311	−1127.777	310.013	−2018.020	−1549.849	−631.810	19.413
	1800.00	201.460	535.187	351.766	−1107.631	330.159	−2070.968	−1543.185	−578.000	16.773
	1900.00	201.460	546.080	361.709	−1087.485	350.305	−2125.036	−1536.572	−524.559	14.421
	2000.00	201.460	556.413	371.188	−1067.339	370.451	−2180.165	−1530.012	−471.465	12.313

References

Phase	H / S	C_p
SOL−A	Nb1,Ja1	Ja1
SOL−B	Ja1	Ja1
LIQ	Ja1	Ja1

Kr[g] KRYPTON (GAS) 83.800

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	20.786	164.085	164.085	0.000	0.000	−48.922	0.000	0.000	0.000
	300.00	20.786	164.213	164.085	0.038	0.038	−49.225	0.000	0.000	0.000
	400.00	20.786	170.193	164.900	2.117	2.117	−65.960	0.000	0.000	0.000
	500.00	20.786	174.831	166.440	4.196	4.196	−83.220	0.000	0.000	0.000
	600.00	20.786	178.621	168.164	6.274	6.274	−100.898	0.000	0.000	0.000
	700.00	20.786	181.825	169.892	8.353	8.353	−118.925	0.000	0.000	0.000
	800.00	20.786	184.601	171.561	10.432	10.432	−137.249	0.000	0.000	0.000
	900.00	20.786	187.049	173.149	12.510	12.510	−155.834	0.000	0.000	0.000
	1000.00	20.786	189.239	174.650	14.589	14.589	−174.650	0.000	0.000	0.000
	1100.00	20.786	191.220	176.068	16.667	16.667	−193.675	0.000	0.000	0.000
	1200.00	20.786	193.029	177.407	18.746	18.746	−212.889	0.000	0.000	0.000
	1300.00	20.786	194.693	178.674	20.825	20.825	−232.276	0.000	0.000	0.000
	1400.00	20.786	196.233	179.874	22.903	22.903	−251.823	0.000	0.000	0.000
	1500.00	20.786	197.667	181.013	24.982	24.982	−271.519	0.000	0.000	0.000
	1600.00	20.786	199.009	182.096	27.060	27.060	−291.353	0.000	0.000	0.000
	1700.00	20.786	200.269	183.128	29.139	29.139	−311.318	0.000	0.000	0.000
	1800.00	20.786	201.457	184.114	31.218	31.218	−331.405	0.000	0.000	0.000
	1900.00	20.786	202.581	185.056	33.296	33.296	−351.607	0.000	0.000	0.000
	2000.00	20.786	203.647	185.960	35.375	35.375	−371.919	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1

138.906

LANTHANUM

La

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[	J / (K mol)	]	[		kJ / mol	]		[−]
SOL−A	298.15	27.136	56.902	56.902	0.000	0.000	−16.965	0.000	0.000	0.000
	300.00	27.141	57.070	56.903	0.050	0.050	−17.071	0.000	0.000	0.000
	400.00	27.373	64.910	57.970	2.776	2.776	−23.188	0.000	0.000	0.000
	500.00	27.606	71.043	59.993	5.525	5.525	−29.997	0.000	0.000	0.000
	550.00	27.722	73.680	61.120	6.908	6.908	−33.616	0.000	0.000	0.000
			0.662		0.364					
SOL−B	550.00	27.215	74.342	61.120	7.272	7.272	−33.616	0.000	0.000	0.000
	600.00	27.761	76.733	62.322	8.646	8.646	−37.393	0.000	0.000	0.000
	700.00	28.976	81.102	64.699	11.482	11.482	−45.289	0.000	0.000	0.000
	800.00	30.293	85.056	67.000	14.445	14.445	−53.600	0.000	0.000	0.000
	900.00	31.668	88.703	69.211	17.543	17.543	−62.290	0.000	0.000	0.000
	1000.00	33.080	92.112	71.333	20.780	20.780	−71.333	0.000	0.000	0.000
	1100.00	34.516	95.332	73.369	24.159	24.159	−80.706	0.000	0.000	0.000
	1134.00	35.008	96.390	74.044	25.341	25.341	−83.966	0.000	0.000	0.000
			2.752		3.121					
SOL−C	1134.00	39.539	99.143	74.044	28.462	28.462	−83.966	0.000	0.000	0.000
	1193.00	39.539	101.148	75.335	30.795	30.795	−89.875	0.000	0.000	0.000
			5.194		6.197					
LIQ	1193.00	34.309	106.343	75.335	36.992	36.992	−89.875	0.000	0.000	0.000
	1200.00	34.309	106.543	75.516	37.232	37.232	−90.620	0.000	0.000	0.000
	1300.00	34.309	109.289	78.010	40.663	40.663	−101.413	0.000	0.000	0.000
	1400.00	34.309	111.832	80.336	44.094	44.094	−112.471	0.000	0.000	0.000
	1500.00	34.309	114.199	82.516	47.525	47.525	−123.774	0.000	0.000	0.000
	1600.00	34.309	116.413	84.566	50.956	50.956	−135.306	0.000	0.000	0.000
	1700.00	34.309	118.493	86.501	54.387	54.387	−147.052	0.000	0.000	0.000
	1800.00	34.309	120.454	88.333	57.817	57.817	−159.000	0.000	0.000	0.000
	1900.00	34.309	122.309	90.073	61.248	61.248	−171.139	0.000	0.000	0.000
	2000.00	34.309	124.069	91.729	64.679	64.679	−183.459	0.000	0.000	0.000
	2100.00	34.309	125.743	93.310	68.110	68.110	−195.950	0.000	0.000	0.000
	2200.00	34.309	127.339	94.820	71.541	71.541	−208.605	0.000	0.000	0.000
	2300.00	34.309	128.864	96.268	74.972	74.972	−221.416	0.000	0.000	0.000
	2400.00	34.309	130.324	97.657	78.403	78.403	−234.376	0.000	0.000	0.000
	2500.00	34.309	131.725	98.991	81.834	81.834	−247.479	0.000	0.000	0.000
	2600.00	34.309	133.070	100.276	85.264	85.264	−260.719	0.000	0.000	0.000
	2700.00	34.309	134.365	101.515	88.695	88.695	−274.091	0.000	0.000	0.000
	2800.00	34.309	135.613	102.711	92.126	92.126	−287.590	0.000	0.000	0.000
	2900.00	34.309	136.817	103.866	95.557	95.557	−301.212	0.000	0.000	0.000
	3000.00	34.309	137.980	104.984	98.988	98.988	−314.952	0.000	0.000	0.000
	3100.00	34.309	139.105	106.067	102.419	102.419	−328.807	0.000	0.000	0.000
	3200.00	34.309	140.194	107.116	105.850	105.850	−342.772	0.000	0.000	0.000
	3300.00	34.309	141.250	108.135	109.281	109.281	−356.845	0.000	0.000	0.000
	3400.00	34.309	142.274	109.124	112.712	112.712	−371.021	0.000	0.000	0.000
	3500.00	34.309	143.269	110.085	116.142	116.142	−385.298	0.000	0.000	0.000
	3600.00	34.309	144.235	111.021	119.573	119.573	−399.674	0.000	0.000	0.000
	3700.00	34.309	145.175	111.931	123.004	123.004	−414.145	0.000	0.000	0.000
	3726.00	34.309	145.416	112.164	123.896	123.896	−417.922	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks
SOL−A	Hu1	Hu1	
SOL−B	Hu1	Hu1	
SOL−C	Hu1	Hu1	
LIQ	Hu1	Hu1	Hu1 BPT= 3726., L= 413.72 kJ

La[g] LANTHANUM (GAS) 138.906

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	22.734	182.377	182.377	430.952	0.000	376.576	430.952	393.542	−68.947
	300.00	22.777	182.518	182.377	430.994	0.042	376.239	430.944	393.310	−68.481
	400.00	24.660	189.348	183.296	433.373	2.421	357.634	430.597	380.822	−49.730
	500.00	25.970	194.998	185.087	435.907	4.955	338.408	430.382	368.405	−38.487
	600.00	27.006	199.827	187.151	438.558	7.606	318.661	429.911	356.055	−30.997
	700.00	27.907	204.059	189.270	441.304	10.352	298.463	429.822	343.752	−25.651
	800.00	28.740	207.841	191.360	444.137	13.185	277.864	429.692	331.464	−21.642
	900.00	29.540	211.272	193.384	447.051	16.099	256.906	429.509	319.196	−18.526
	1000.00	30.327	214.425	195.333	450.045	19.093	235.619	429.265	306.952	−16.034
	1100.00	30.945	217.346	197.203	453.110	22.158	214.029	428.951	294.735	−13.996
	1200.00	31.383	220.059	198.996	456.228	25.276	192.157	418.995	282.777	−12.309
	1300.00	31.680	222.583	200.714	459.382	28.430	170.023	418.719	271.436	−10.906
	1400.00	31.871	224.939	202.362	462.560	31.608	147.646	418.466	260.117	−9.705
	1500.00	31.984	227.142	203.941	465.753	34.801	125.041	418.229	248.814	−8.664
	1600.00	32.043	229.208	205.456	468.955	38.003	102.222	417.999	237.528	−7.754
	1700.00	32.064	231.151	206.911	472.161	41.209	79.203	417.774	226.255	−6.952
	1800.00	32.061	232.984	208.309	475.367	44.415	55.995	417.550	214.996	−6.239
	1900.00	32.045	234.717	209.654	478.572	47.620	32.610	417.324	203.749	−5.601
	2000.00	32.023	236.360	210.949	481.776	50.824	9.055	417.097	192.514	−5.028
	2100.00	32.002	237.922	212.196	484.977	54.025	−14.660	416.867	181.290	−4.509
	2200.00	31.986	239.411	213.400	488.176	57.224	−38.527	416.635	170.078	−4.038
	2300.00	31.978	240.832	214.562	491.374	60.422	−62.540	416.403	158.876	−3.608
	2400.00	31.982	242.193	215.685	494.572	63.620	−86.691	416.170	147.684	−3.214
	2500.00	31.998	243.499	216.771	497.771	66.819	−110.977	415.938	136.502	−2.852
	2600.00	32.028	244.755	217.824	500.972	70.020	−135.390	415.708	125.329	−2.518
	2700.00	32.073	245.964	218.844	504.177	73.225	−159.926	415.482	114.165	−2.209
	2800.00	32.131	247.132	219.833	507.388	76.436	−184.581	415.261	103.009	−1.922
	2900.00	32.204	248.260	220.794	510.604	79.652	−209.351	415.047	91.861	−1.655
	3000.00	32.291	249.354	221.728	513.829	82.877	−234.232	414.841	80.720	−1.405
	3100.00	32.391	250.414	222.636	517.063	86.111	−259.221	414.644	69.586	−1.173
	3200.00	32.503	251.444	223.521	520.307	89.355	−284.314	414.458	58.458	−0.954
	3300.00	32.627	252.446	224.382	523.564	92.612	−309.508	414.283	47.336	−0.749
	3400.00	32.761	253.422	225.222	526.833	95.881	−334.802	414.122	36.219	−0.556
	3500.00	32.903	254.374	226.041	530.116	99.164	−360.192	413.974	25.106	−0.375
	3600.00	33.053	255.303	226.841	533.414	102.462	−385.676	413.841	13.998	−0.203
	3700.00	33.210	256.211	227.623	536.727	105.775	−411.252	413.723	2.893	−0.041
	3800.00	33.370	257.098	228.387	540.056	109.104	−436.918	0.000	0.000	0.000
	3900.00	33.534	257.967	229.134	543.401	112.449	−462.671	0.000	0.000	0.000
	4000.00	33.700	258.818	229.866	546.763	115.811	−488.510	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Hu1	Hu1

277.825

LANTHANUM ARSENATE **LaAsO4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	117.888	163.469	163.469	−1556.866	0.000	−1605.604	−1556.866	−1455.664	255.026
	300.00	118.239	164.199	163.471	−1556.648	0.218	−1605.907	−1556.852	−1455.036	253.344
	400.00	131.829	200.284	168.299	−1544.072	12.794	−1624.186	−1555.451	−1421.278	185.600
	500.00	140.001	230.636	177.814	−1530.455	26.411	−1645.773	−1553.267	−1387.976	145.001
	600.00	146.039	256.716	188.841	−1516.141	40.725	−1670.171	−1551.016	−1355.124	117.974
	700.00	151.071	279.615	200.206	−1501.280	55.586	−1697.010	−1548.178	−1322.698	98.701
	781.00	154.740	296.356	209.323	−1488.893	67.973	−1720.347	−1545.784	−1296.739	86.728

References

Phase	H / S	C_p
SOL	G1	G1

378.618

LANTHANUM BROMIDE **LaBr3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	99.564	177.820	177.820	−907.091	0.000	−960.108	−907.091	−875.071	153.309
	300.00	99.654	178.436	177.822	−906.907	0.184	−960.438	−907.167	−874.872	152.329
	400.00	103.685	207.689	181.783	−896.729	10.362	−979.804	−951.438	−854.891	111.637
	500.00	106.871	231.177	189.389	−886.197	20.894	−1001.785	−949.193	−831.009	86.815
	600.00	109.725	250.918	198.041	−875.365	31.726	−1025.916	−947.060	−807.570	70.305
	700.00	112.422	268.036	206.844	−864.257	42.834	−1051.882	−944.391	−784.531	58.542
	800.00	115.035	283.219	215.459	−852.884	54.207	−1079.459	−941.602	−761.882	49.746
	900.00	117.600	296.916	223.761	−841.251	65.840	−1108.476	−938.703	−739.590	42.925
	1000.00	120.134	309.438	231.712	−829.365	77.726	−1138.803	−935.702	−717.627	37.485
	1061.00	121.670	316.597	236.388	−821.990	85.101	−1157.899	−933.823	−704.380	34.678
			51.265		54.392					
LIQ	1061.00	138.072	367.861	236.388	−767.598	139.493	−1157.899	−879.431	−704.380	34.678
	1100.00	138.072	372.846	241.138	−762.213	144.878	−1172.343	−877.589	−697.979	33.144
	1200.00	138.072	384.859	252.622	−748.406	158.685	−1210.237	−882.524	−681.630	29.671
	1300.00	138.072	395.911	263.224	−734.598	172.493	−1249.283	−877.826	−665.079	26.723

References

Phase	H / S	C_p
SOL	Pa2	Pa2
LIQ	Dw2	Dw2

LaBr3[g] LANTHANUM BROMIDE (GAS) 378.618

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[	J / (K mol)	]	[		kJ / mol		]	[−]
GAS	298.15	80.037	383.703	383.703	−603.751	0.000	−718.152	−603.751	−633.115	110.919
	300.00	80.075	384.198	383.704	−603.603	0.148	−718.862	−603.863	−633.296	110.267
	400.00	81.384	407.440	386.864	−595.521	8.230	−758.497	−650.230	−633.584	82.738
	500.00	81.994	425.673	392.868	−587.348	16.403	−800.185	−650.345	−629.409	65.754
	600.00	82.329	440.655	399.621	−579.131	24.620	−843.524	−650.826	−625.178	54.427
	700.00	82.534	453.362	406.414	−570.887	32.864	−888.241	−651.021	−620.889	46.331
	800.00	82.669	464.393	412.987	−562.626	41.125	−934.141	−651.345	−616.564	40.258
	900.00	82.764	474.136	419.251	−554.354	49.397	−981.076	−651.806	−612.191	35.531
	1000.00	82.835	482.859	425.183	−546.074	57.677	−1028.934	−652.412	−607.758	31.746
	1100.00	82.889	490.757	430.791	−537.788	65.963	−1077.621	−653.165	−603.257	28.646
	1200.00	82.932	497.971	436.093	−529.497	74.254	−1127.062	−663.616	−598.455	26.050
	1300.00	82.967	504.611	441.112	−521.202	82.549	−1177.196	−664.430	−592.992	23.827
	1400.00	82.996	510.760	445.870	−512.904	90.847	−1227.968	−665.250	−587.467	21.919
	1500.00	83.021	516.487	450.389	−504.603	99.148	−1279.334	−666.076	−581.882	20.263
	1600.00	83.043	521.846	454.689	−496.300	107.451	−1331.254	−666.907	−576.242	18.812
	1700.00	83.063	526.881	458.789	−487.994	115.757	−1383.692	−667.744	−570.550	17.531
	1800.00	83.080	531.629	462.705	−479.687	124.064	−1436.620	−668.587	−564.808	16.390
	1900.00	83.096	536.122	466.452	−471.378	132.373	−1490.010	−669.436	−559.019	15.369
	2000.00	83.111	540.385	470.043	−463.068	140.683	−1543.837	−670.291	−553.186	14.448

References

Phase	H / S	C_p
GAS	Pa2	Pa2

245.264 LANTHANUM CHLORIDE **LaCl3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	98.132	137.570	137.570	−1071.104	0.000	−1112.120	−1071.104	−995.372	174.385
	300.00	98.250	138.177	137.572	−1070.922	0.182	−1112.376	−1071.067	−994.902	173.228
	400.00	103.486	167.204	141.494	−1060.820	10.284	−1127.702	−1068.891	−969.833	126.647
	500.00	107.545	190.745	149.063	−1050.263	20.841	−1145.635	−1066.439	−945.347	98.760
	600.00	111.139	210.675	157.712	−1039.326	31.778	−1165.731	−1064.076	−921.347	80.210
	700.00	114.515	228.063	166.546	−1028.042	43.062	−1187.686	−1061.143	−897.788	66.994
	800.00	117.774	243.568	175.222	−1016.427	54.677	−1211.281	−1058.049	−874.661	57.110
	900.00	120.966	257.625	183.608	−1004.489	66.615	−1236.352	−1054.798	−851.931	49.445
	1000.00	124.115	270.533	191.664	−992.235	78.869	−1262.768	−1051.392	−829.572	43.332
	1100.00	127.237	282.509	199.385	−979.667	91.437	−1290.427	−1047.835	−807.561	38.348
	1131.00	128.200	286.059	201.712	−975.708	95.396	−1299.240	−1046.701	−800.805	36.985
			48.092		54.392					
LIQ	1131.00	157.737	334.151	201.712	−921.316	149.788	−1299.240	−992.309	−800.805	36.985
	1200.00	157.737	343.492	209.598	−910.432	160.672	−1322.622	−997.318	−789.032	34.346
	1300.00	157.737	356.117	220.390	−894.658	176.446	−1357.611	−990.635	−771.946	31.017
	1400.00	157.737	367.807	230.507	−878.885	192.219	−1393.814	−983.964	−755.374	28.183
	1500.00	157.737	378.690	240.028	−863.111	207.993	−1431.145	−977.304	−739.279	25.744

References

Phase	H / S	C_p
SOL	Pa2	Pa2
LIQ	Pa2	Pa2

LaCl3[g] LANTHANUM CHLORIDE (GAS) 245.264

Phase	T	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	78.423	356.628	356.628	–733.455	0.000	–839.784	–733.455	–723.035	126.673
	300.00	78.479	357.113	356.630	–733.310	0.145	–840.444	–733.454	–722.970	125.880
	400.00	80.445	380.000	359.737	–725.350	8.105	–877.350	–733.421	–719.481	93.955
	500.00	81.364	398.060	365.659	–717.254	16.201	–916.285	–733.430	–715.996	74.800
	600.00	81.870	412.944	372.336	–709.090	24.365	–956.857	–733.841	–712.472	62.026
	700.00	82.182	425.589	379.063	–700.887	32.568	–998.799	–733.988	–708.901	52.899
	800.00	82.389	436.577	385.580	–692.657	40.798	–1041.919	–734.279	–705.299	46.051
	900.00	82.537	446.290	391.797	–684.411	49.044	–1086.072	–734.719	–701.652	40.723
	1000.00	82.647	454.993	397.689	–676.151	57.304	–1131.144	–735.309	–697.948	36.457
	1100.00	82.733	462.874	403.262	–667.882	65.573	–1177.043	–736.050	–694.177	32.964
	1200.00	82.801	470.076	408.534	–659.605	73.850	–1223.696	–746.492	–690.106	30.040
	1300.00	82.858	476.705	413.526	–651.322	82.133	–1271.039	–747.299	–685.375	27.539
	1400.00	82.907	482.848	418.261	–643.034	90.421	–1319.021	–748.113	–680.581	25.393
	1500.00	82.949	488.569	422.760	–634.741	98.714	–1367.595	–748.934	–675.729	23.531
	1600.00	82.987	493.924	427.042	–626.444	107.011	–1416.722	–749.762	–670.821	21.900
	1700.00	83.021	498.956	431.126	–618.144	115.311	–1466.369	–750.597	–665.862	20.459
	1800.00	83.052	503.702	435.027	–609.840	123.615	–1516.504	–751.440	–660.853	19.177
	1900.00	83.080	508.193	438.761	–601.534	131.921	–1567.101	–752.291	–655.797	18.029
	2000.00	83.107	512.455	442.340	–593.224	140.231	–1618.135	–753.149	–650.697	16.994

References

Phase	H / S	C_p
GAS	Pa2	Pa2

195.901

LANTHANUM FLUORIDE

LaF3

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[J / (K mol)]			[kJ / mol]					
SOL−A	298.15	90.293	106.985	106.985	−1699.541	0.000	−1731.439	−1699.541	−1623.778	284.479
	300.00	90.307	107.543	106.987	−1699.374	0.167	−1731.637	−1699.511	−1623.308	282.643
	400.00	92.319	133.750	110.546	−1690.259	9.282	−1743.760	−1697.943	−1598.145	208.696
	500.00	95.594	154.689	117.347	−1680.870	18.671	−1758.214	−1696.347	−1573.378	164.370
	600.00	99.365	172.446	125.085	−1671.125	28.416	−1774.592	−1694.932	−1548.914	134.845
	700.00	103.372	188.062	132.988	−1660.989	38.552	−1792.633	−1692.958	−1524.732	113.777
	800.00	107.504	202.134	140.766	−1650.446	49.095	−1812.153	−1690.787	−1500.845	97.995
	900.00	111.708	215.039	148.311	−1639.486	60.055	−1833.021	−1688.396	−1477.244	85.737
	1000.00	115.958	227.028	155.590	−1628.103	71.438	−1855.131	−1685.771	−1453.921	75.945
	1100.00	120.237	238.280	162.601	−1616.293	83.248	−1878.402	−1682.900	−1430.873	67.946
	1200.00	124.536	248.926	169.355	−1604.055	95.486	−1902.767	−1689.327	−1407.871	61.283
	1300.00	128.850	259.065	175.869	−1591.386	108.155	−1928.170	−1685.709	−1384.560	55.632
	1400.00	133.173	268.772	182.160	−1578.285	121.256	−1954.565	−1681.683	−1361.543	50.800
	1500.00	137.505	278.108	188.247	−1564.751	134.790	−1981.912	−1677.245	−1338.829	46.622
	1600.00	141.842	287.120	194.147	−1550.784	148.757	−2010.176	−1672.393	−1316.423	42.977
	1700.00	146.183	295.850	199.874	−1536.382	163.159	−2039.327	−1667.126	−1294.334	39.770
	1766.00	149.050	301.472	203.566	−1526.640	172.901	−2059.039	−1663.420	−1279.932	37.858
			28.430		50.208					
LIQ	1766.00	167.360	329.902	203.566	−1476.432	223.109	−2059.039	−1613.212	−1279.932	37.858
	1800.00	167.360	333.094	205.983	−1470.741	228.800	−2070.310	−1610.634	−1273.540	36.957
	1900.00	167.360	342.142	212.913	−1454.005	245.536	−2104.076	−1603.064	−1255.019	34.503
	2000.00	167.360	350.727	219.591	−1437.269	262.272	−2138.723	−1595.507	−1236.896	32.304

References

Phase	H / S	C_p
SOL−A	Pa2	Pa2
LIQ	Pa2	Pa2

LaF3[g] LANTHANUM FLUORIDE (GAS) 195.901

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	72.711	321.859	321.859	−1264.405	0.000	−1360.367	−1264.405	−1252.707	219.469
	300.00	72.828	322.309	321.860	−1264.270	0.135	−1360.963	−1264.408	−1252.634	218.103
	400.00	76.943	343.907	324.777	−1256.753	7.652	−1394.316	−1264.436	−1248.702	163.064
	500.00	78.889	361.309	330.401	−1248.951	15.454	−1429.605	−1264.428	−1244.769	130.040
	600.00	79.982	375.797	336.793	−1241.003	23.402	−1466.481	−1264.811	−1240.803	108.022
	700.00	80.672	388.182	343.271	−1232.968	31.437	−1504.695	−1264.937	−1236.794	92.291
	800.00	81.147	398.987	349.575	−1224.875	39.530	−1544.065	−1265.216	−1232.756	80.491
	900.00	81.497	408.566	355.607	−1216.742	47.663	−1584.452	−1265.652	−1228.674	71.310
	1000.00	81.770	417.167	361.341	−1208.579	55.826	−1625.746	−1266.246	−1224.535	63.963
	1100.00	81.992	424.971	366.776	−1200.390	64.015	−1667.858	−1266.997	−1220.329	57.949
	1200.00	82.179	432.114	371.927	−1192.181	72.224	−1710.718	−1277.453	−1215.822	52.923
	1300.00	82.343	438.698	376.814	−1183.955	80.450	−1754.263	−1278.278	−1210.653	48.645
	1400.00	82.488	444.806	381.455	−1175.713	88.692	−1798.441	−1279.111	−1205.420	44.975
	1500.00	82.621	450.501	385.870	−1167.458	96.947	−1843.210	−1279.952	−1200.127	41.792
	1600.00	82.743	455.838	390.078	−1159.190	105.215	−1888.530	−1280.800	−1194.777	39.005
	1700.00	82.858	460.857	394.095	−1150.910	113.495	−1934.367	−1281.653	−1189.375	36.545
	1800.00	82.967	465.597	397.937	−1142.618	121.787	−1980.692	−1282.511	−1183.922	34.357
	1900.00	83.071	470.085	401.617	−1134.316	130.089	−2027.478	−1283.374	−1178.421	32.397
	2000.00	83.171	474.349	405.148	−1126.004	138.401	−2074.701	−1284.242	−1172.875	30.632

References

Phase	H / S	C_p
GAS	Pa2	Pa2

LaH2 LANTHANUM DIHYDRIDE 140.921

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	43.762	51.672	51.672	−202.100	0.000	−217.506	−202.100	−161.578	28.308
	300.00	43.790	51.943	51.673	−202.019	0.081	−217.602	−202.123	−161.327	28.090
	400.00	45.304	64.748	53.409	−197.564	4.536	−223.464	−203.300	−147.548	19.268
	500.00	46.819	75.020	56.737	−192.958	9.142	−230.468	−204.365	−133.485	13.945
	600.00	48.334	83.690	60.524	−188.201	13.899	−238.415	−205.658	−119.186	10.376
	700.00	49.848	91.255	64.385	−183.291	18.809	−247.170	−206.522	−104.705	7.813
	800.00	51.363	98.010	68.173	−178.231	23.869	−256.639	−207.377	−90.102	5.883
	900.00	52.877	104.147	71.835	−173.019	29.081	−266.751	−208.238	−75.391	4.376
	1000.00	54.392	109.796	75.352	−167.655	34.445	−277.452	−209.115	−60.583	3.165
	1100.00	55.907	115.052	78.725	−162.140	39.960	−288.697	−210.018	−45.686	2.169
	1200.00	57.421	119.981	81.959	−156.474	45.626	−300.451	−220.503	−30.480	1.327

References

Phase	H / S	C_p
SOL	Nb1/B2	B2,e

519.619

LANTHANUM IODIDE

LaI3

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	99.170	214.221	214.221	−666.930	0.000	−730.800	−666.930	−661.893	115.961
	300.00	99.238	214.834	214.223	−666.746	0.184	−731.197	−666.948	−661.862	115.240
	400.00	102.597	243.856	218.157	−656.650	10.280	−754.193	−692.035	−659.176	86.080
	500.00	105.632	267.079	225.694	−646.237	20.693	−779.777	−756.662	−644.744	67.356
	600.00	108.540	286.596	234.260	−635.528	31.402	−807.486	−754.701	−622.542	54.197
	700.00	111.387	303.542	242.973	−624.532	42.398	−837.011	−752.184	−600.712	44.826
	800.00	114.203	318.600	251.502	−613.252	53.678	−868.132	−749.525	−579.253	37.821
	900.00	117.000	332.213	259.726	−601.692	65.238	−900.683	−746.733	−558.135	32.393
	1000.00	119.785	344.684	267.606	−589.852	77.078	−934.536	−743.813	−537.335	28.068
	1051.00	121.203	350.678	271.493	−583.707	83.223	−952.269	−742.275	−526.843	26.184
			53.345		56.066					
LIQ	1051.00	151.766	404.023	271.493	−527.641	139.289	−952.269	−686.209	−526.843	26.184
	1100.00	151.766	410.939	277.552	−520.204	146.726	−972.237	−683.236	−519.482	24.668
	1200.00	151.766	424.144	289.226	−505.028	161.902	−1014.001	−686.834	−504.633	21.966
	1300.00	151.766	436.292	300.077	−489.851	177.079	−1057.031	−680.800	−489.694	19.676

References

Phase	H / S	C_p
SOL	Nb1/Pa2	Dw4,Pa2
LIQ	Dw4	Dw4

LaI_3[g] LANTHANUM IODIDE (GAS) 519.619

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
GAS	298.15	81.562	412.752	412.752	−387.857	0.000	−510.919	−387.857	−442.012	77.439
	300.00	81.581	413.257	412.754	−387.706	0.151	−511.683	−387.907	−442.348	77.020
	400.00	82.258	436.833	415.964	−379.509	8.348	−554.242	−414.894	−459.226	59.969
	500.00	82.572	455.226	422.044	−371.266	16.591	−598.879	−481.691	−463.846	48.458
	600.00	82.744	470.297	428.868	−363.000	24.857	−645.178	−482.172	−460.233	40.067
	700.00	82.848	483.060	435.721	−354.720	33.137	−692.862	−482.372	−456.563	34.069
	800.00	82.916	494.128	442.346	−346.431	41.426	−741.734	−482.705	−452.855	29.568
	900.00	82.963	503.897	448.653	−338.137	49.720	−791.644	−483.179	−449.096	26.065
	1000.00	82.997	512.640	454.622	−329.839	58.018	−842.479	−483.799	−445.277	23.259
	1100.00	83.023	520.552	460.261	−321.538	66.319	−894.145	−484.570	−441.389	20.960
	1200.00	83.043	527.776	465.591	−313.235	74.622	−946.566	−495.041	−437.198	19.031
	1300.00	83.059	534.424	470.634	−304.930	82.927	−999.681	−495.879	−432.344	17.372
	1400.00	83.072	540.580	475.413	−296.623	91.234	−1053.435	−496.724	−427.425	15.947
	1500.00	83.083	546.312	479.950	−288.315	99.542	−1107.783	−497.577	−422.446	14.711
	1600.00	83.092	551.674	484.267	−280.006	107.851	−1162.685	−498.438	−417.409	13.627
	1700.00	83.100	556.712	488.382	−271.697	116.160	−1218.107	−499.308	−412.318	12.669
	1800.00	83.107	561.462	492.311	−263.387	124.470	−1274.017	−500.185	−407.176	11.816
	1900.00	83.113	565.955	496.070	−255.076	132.781	−1330.390	−501.071	−401.984	11.051
	2000.00	83.118	570.218	499.672	−246.764	141.093	−1387.201	−501.965	−396.746	10.362

References

Phase	H / S	C_p
GAS	Pa2	Pa2

LaMg LANTHANUM MAGNESIUM 163.210

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[−]
SOL	298.15	56.648	103.303	103.303	−9.845	0.000	−40.645	−9.845	−13.937	2.442
	300.00	56.685	103.654	103.304	−9.740	0.105	−40.836	−9.836	−13.962	2.431
	400.00	58.676	120.233	105.551	−3.972	5.873	−52.066	−9.345	−15.410	2.012
	500.00	60.668	133.541	109.860	1.995	11.840	−64.775	−8.796	−16.988	1.775
	600.00	62.660	144.778	114.767	8.161	18.006	−78.705	−8.537	−18.651	1.624
	700.00	64.651	154.586	119.769	14.527	24.372	−93.683	−7.912	−20.386	1.521
	800.00	66.643	163.349	124.678	21.092	30.937	−109.588	−7.332	−22.208	1.450
	900.00	68.634	171.314	129.424	27.856	37.701	−126.327	−6.806	−24.100	1.399
	1000.00	70.626	178.648	133.985	34.819	44.664	−143.830	−15.287	−25.289	1.321
	1018.00	70.984	179.911	134.785	36.093	45.938	−147.057	−15.197	−25.470	1.307

References

Phase	H / S	C_p	Remarks	
SOL	Hu1,e	e	Hu1	MPT= 1018.

152.912

LANTHANUM NITRIDE

LaN

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	40.358	44.350	44.350	−303.340	0.000	−316.563	−303.340	−271.034	47.484
	300.00	40.471	44.600	44.351	−303.265	0.075	−316.645	−303.342	−270.833	47.156
	400.00	44.680	56.892	45.998	−298.983	4.357	−321.739	−303.244	−260.001	33.953
	500.00	46.999	67.131	49.231	−294.390	8.950	−327.955	−302.870	−249.229	26.037
	600.00	48.574	75.847	52.958	−289.607	13.733	−335.115	−302.700	−238.516	20.765
	700.00	49.798	83.430	56.782	−284.686	18.654	−343.087	−302.137	−227.863	17.003
	800.00	50.834	90.148	60.540	−279.654	23.686	−351.772	−301.621	−217.289	14.187
	900.00	51.762	96.190	64.171	−274.523	28.817	−361.094	−301.177	−206.775	12.001
	1000.00	52.622	101.689	67.652	−269.303	34.037	−370.992	−300.814	−196.306	10.254
	1100.00	53.438	106.743	70.979	−264.000	39.340	−381.417	−300.539	−185.869	8.826
	1200.00	54.224	111.427	74.157	−258.617	44.723	−392.329	−309.903	−175.227	7.627
	1300.00	54.989	115.797	77.194	−253.156	50.184	−403.692	−309.570	−164.017	6.590
	1400.00	55.738	119.900	80.099	−247.619	55.721	−415.479	−309.182	−152.835	5.702
	1500.00	56.476	123.770	82.883	−242.009	61.331	−427.664	−308.736	−141.683	4.934
	1600.00	57.205	127.439	85.554	−236.325	67.015	−440.226	−308.232	−130.562	4.262
	1700.00	57.928	130.928	88.121	−230.568	72.772	−453.146	−307.669	−119.475	3.671
	1800.00	58.645	134.260	90.593	−224.739	78.601	−466.407	−307.046	−108.422	3.146

References

Phase	H / S	C_p
SOL	Nb1/Ku1	e

La2O3 — LANTHANUM OXIDE — 325.809

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	108.781	127.319	127.319	−1793.702	0.000	−1831.662	−1793.702	−1705.984	298.881
	300.00	108.995	127.993	127.321	−1793.501	0.201	−1831.898	−1793.683	−1705.440	296.944
	400.00	116.983	160.578	131.710	−1782.155	11.547	−1846.386	−1792.245	−1676.225	218.893
	500.00	121.444	187.199	140.228	−1770.217	23.485	−1863.816	−1790.393	−1647.429	172.106
	600.00	124.517	209.626	149.974	−1757.911	35.791	−1883.687	−1789.069	−1618.960	140.943
	700.00	126.935	229.008	159.911	−1745.335	48.367	−1905.640	−1787.046	−1590.770	118.705
	800.00	129.004	246.095	169.637	−1732.535	61.167	−1929.412	−1785.178	−1562.861	102.044
	900.00	130.869	261.399	178.998	−1719.541	74.161	−1954.800	−1783.487	−1535.174	89.099
	1000.00	132.609	275.278	187.942	−1706.366	87.336	−1981.644	−1781.979	−1507.667	78.752
	1100.00	134.265	287.996	196.468	−1693.022	100.680	−2009.817	−1780.658	−1480.301	70.294
	1200.00	135.866	299.747	204.591	−1679.515	114.187	−2039.211	−1798.620	−1452.595	63.230
	1300.00	137.428	310.684	212.336	−1665.850	127.852	−2069.739	−1797.192	−1423.817	57.210
	1400.00	138.960	320.925	219.731	−1652.030	141.672	−2101.325	−1795.654	−1395.153	52.054
	1500.00	140.472	330.564	226.801	−1638.058	155.644	−2133.904	−1794.005	−1366.603	47.589
	1600.00	141.967	339.678	233.574	−1623.936	169.766	−2167.420	−1792.246	−1338.166	43.687
	1700.00	143.450	348.329	240.072	−1609.665	184.037	−2201.824	−1790.375	−1309.843	40.247
	1800.00	144.923	356.570	246.317	−1595.247	198.455	−2237.072	−1788.392	−1281.633	37.192
	1900.00	146.388	364.445	252.328	−1580.681	213.021	−2273.126	−1786.297	−1253.536	34.462
	2000.00	147.847	371.991	258.124	−1565.969	227.733	−2309.950	−1784.091	−1225.553	32.008

References

Phase	H / S	C_p
SOL−A	Nb1	Pa1

LaOCl — LANTHANUM CHLORIDE OXIDE — 190.358

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	68.978	82.843	82.843	−1010.854	0.000	−1035.554	−1010.854	−954.745	167.267
	300.00	69.064	83.270	82.845	−1010.726	0.128	−1035.707	−1010.835	−954.397	166.175
	400.00	72.528	103.659	85.601	−1003.631	7.223	−1045.094	−1009.684	−935.751	122.197
	500.00	74.789	120.099	90.909	−996.259	14.595	−1056.309	−1008.377	−917.417	95.842
	600.00	76.577	133.897	96.954	−988.688	22.166	−1069.027	−1007.325	−899.323	78.293
	700.00	78.143	145.821	103.103	−980.951	29.903	−1083.026	−1005.889	−881.437	65.774
	800.00	79.589	156.351	109.113	−973.064	37.790	−1098.145	−1004.485	−863.754	56.397
	900.00	80.965	165.805	114.896	−965.036	45.818	−1114.260	−1003.120	−846.245	49.115
	1000.00	82.299	174.405	120.423	−956.872	53.982	−1131.277	−1001.796	−828.886	43.297
	1100.00	83.605	182.311	125.695	−948.577	62.277	−1149.118	−1000.511	−811.658	38.542
	1200.00	84.892	189.641	130.722	−940.152	70.702	−1167.720	−1008.816	−794.318	34.576

References

Phase	H / S	C_p
SOL	Nb1/e	e

170.971

LANTHANUM MONOSULFIDE

LaS

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		J / (K mol)			kJ / mol					[–]
SOL	298.15	48.106	71.128	71.128	−456.056	0.000	−477.263	−456.056	−450.740	78.968
	300.00	48.116	71.426	71.129	−455.967	0.089	−477.395	−456.059	−450.707	78.475
	400.00	48.660	85.342	73.023	−451.128	4.928	−485.265	−458.527	−448.800	58.607
	500.00	49.204	96.259	76.617	−446.235	9.821	−494.364	−460.285	−446.187	46.613
	600.00	49.748	105.278	80.664	−441.287	14.769	−504.454	−462.035	−443.194	38.583
	700.00	50.292	112.987	84.744	−436.285	19.771	−515.377	−463.179	−439.963	32.830
	800.00	50.836	119.738	88.705	−431.229	24.827	−527.020	−464.445	−436.563	28.505
	900.00	51.380	125.757	92.493	−426.118	29.938	−539.300	−518.638	−431.842	25.063
	1000.00	51.923	131.199	96.096	−420.953	35.103	−552.152	−518.545	−422.203	22.054
	1100.00	52.467	136.173	99.516	−415.734	40.322	−565.524	−518.548	−412.570	19.591
	1200.00	53.011	140.762	102.765	−410.460	45.596	−579.374	−528.195	−402.706	17.529
	1300.00	53.555	145.026	105.854	−405.131	50.925	−593.666	−528.152	−392.250	15.761
	1400.00	54.099	149.015	108.796	−399.749	56.307	−608.370	−528.059	−381.799	14.245
	1500.00	54.643	152.766	111.603	−394.312	61.744	−623.461	−527.917	−371.357	12.932
	1600.00	55.187	156.310	114.288	−388.820	67.236	−638.916	−527.724	−360.926	11.783
	1700.00	55.731	159.672	116.859	−383.274	72.782	−654.717	−527.482	−350.508	10.770
	1800.00	56.275	162.873	119.327	−377.674	78.382	−670.845	−527.189	−340.106	9.870
	1900.00	56.819	165.930	121.700	−372.019	84.037	−687.287	−526.846	−329.721	9.065
	2000.00	57.363	168.858	123.985	−366.310	89.746	−704.027	−526.452	−319.356	8.341
	2100.00	57.907	171.670	126.190	−360.547	95.509	−721.054	−526.008	−309.012	7.686
	2200.00	58.450	174.377	128.319	−354.729	101.327	−738.358	−525.513	−298.691	7.092
	2300.00	58.994	176.987	130.378	−348.857	107.199	−755.926	−524.967	−288.393	6.550
	2400.00	59.538	179.509	132.373	−342.930	113.126	−773.752	−524.371	−278.119	6.053
	2500.00	60.082	181.951	134.308	−336.949	119.107	−791.826	−523.724	−267.872	5.597
	2600.00	60.626	184.318	136.186	−330.914	125.142	−810.140	−523.026	−257.651	5.176

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	Mi1	Mi1	MPT= 2600.

La2S3 LANTHANUM SULFIDE 374.009

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	120.891	164.975	164.975	−1221.728	0.000	−1270.915	−1221.728	−1208.312	211.691
	300.00	120.918	165.723	164.977	−1221.504	0.224	−1271.221	−1221.731	−1208.229	210.371
	400.00	122.382	200.709	169.738	−1209.339	12.389	−1289.623	−1228.761	−1203.415	157.150
	500.00	123.846	228.175	178.775	−1197.028	24.700	−1311.116	−1233.654	−1196.579	125.006
	600.00	125.311	250.885	188.955	−1184.570	37.158	−1335.101	−1238.167	−1188.714	103.487
	700.00	126.775	270.311	199.223	−1171.966	49.762	−1361.184	−1241.163	−1180.234	88.070
	800.00	128.240	287.336	209.194	−1159.215	62.513	−1389.083	−1244.418	−1171.314	76.479
	900.00	129.704	302.525	218.735	−1146.318	75.410	−1418.590	−1406.335	−1158.505	67.238
	1000.00	131.168	316.266	227.812	−1133.274	88.454	−1449.540	−1405.271	−1131.027	59.079
	1100.00	132.633	328.836	236.433	−1120.084	101.644	−1481.804	−1404.367	−1103.648	52.408
	1200.00	134.097	340.440	244.623	−1106.748	114.980	−1515.275	−1422.722	−1075.892	46.832
	1300.00	135.562	351.231	252.413	−1093.265	128.463	−1549.865	−1421.663	−1047.032	42.070
	1400.00	137.026	361.331	259.836	−1079.635	142.093	−1585.498	−1420.472	−1018.258	37.992
	1500.00	138.490	370.835	266.922	−1065.860	155.868	−1622.111	−1419.150	−989.573	34.460
	1600.00	139.955	379.819	273.700	−1051.937	169.791	−1659.648	−1417.694	−960.982	31.373
	1700.00	141.419	388.348	280.195	−1037.869	183.859	−1698.060	−1416.104	−932.485	28.652
	1800.00	142.884	396.473	286.431	−1023.653	198.075	−1737.304	−1414.381	−904.086	26.236
	1900.00	144.348	404.237	292.429	−1009.292	212.436	−1777.343	−1412.523	−875.786	24.077
	2000.00	145.812	411.679	298.206	−994.784	226.944	−1818.141	−1410.531	−847.588	22.137
	2100.00	147.277	418.828	303.781	−980.129	241.599	−1859.669	−1408.403	−819.493	20.384
	2200.00	148.741	425.713	309.168	−965.328	256.400	−1901.898	−1406.140	−791.502	18.793
	2300.00	150.206	432.357	314.381	−950.381	271.347	−1944.803	−1403.742	−763.617	17.342
	2400.00	151.670	438.781	319.431	−935.287	286.441	−1988.362	−1401.208	−735.839	16.015

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	Mi1	Mi1	MPT= 2400.

217.865

LANTHANUM MONOSELENIDE

LaSe

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	49.193	81.170	81.170	−359.824	0.000	−384.025	−359.824	−354.460	62.100
	300.00	49.204	81.474	81.171	−359.733	0.091	−384.175	−359.830	−354.427	61.711
	400.00	49.790	95.709	83.107	−354.783	5.041	−393.067	−360.274	−352.564	46.040
	500.00	50.375	106.882	86.784	−349.775	10.049	−403.216	−366.825	−350.482	36.615
	600.00	50.961	116.119	90.926	−344.708	15.116	−414.379	−368.394	−347.066	30.215
	700.00	51.547	124.018	95.102	−339.583	20.241	−426.396	−369.619	−343.415	25.626
	800.00	52.133	130.940	99.158	−334.399	25.425	−439.151	−370.912	−339.584	22.173
	900.00	52.718	137.114	103.039	−329.156	30.668	−452.559	−372.282	−335.587	19.477
	1000.00	53.304	142.699	106.730	−323.855	35.969	−466.554	−373.733	−331.433	17.312
	1100.00	53.890	147.807	110.235	−318.495	41.329	−481.083	−428.579	−322.175	15.299
	1200.00	54.476	152.521	113.565	−313.077	46.747	−496.102	−438.301	−312.269	13.593
	1300.00	55.061	156.904	116.732	−307.600	52.224	−511.576	−438.311	−301.765	12.125
	1400.00	55.647	161.006	119.750	−302.065	57.759	−527.473	−438.250	−291.264	10.867
	1500.00	56.233	164.865	122.630	−296.471	63.353	−543.769	−438.119	−280.769	9.777
	1600.00	56.819	168.513	125.385	−290.818	69.006	−560.439	−437.916	−270.285	8.824
	1700.00	57.404	171.975	128.024	−285.107	74.717	−577.465	−437.642	−259.816	7.983
	1800.00	57.990	175.273	130.558	−279.337	80.487	−594.829	−437.297	−249.365	7.236
	1900.00	58.576	178.424	132.995	−273.509	86.315	−612.515	−436.880	−238.936	6.569
	2000.00	59.162	181.444	135.343	−267.622	92.202	−630.510	−436.392	−228.530	5.969
	2100.00	59.748	184.344	137.608	−261.677	98.147	−648.800	−435.832	−218.150	5.426
	2200.00	60.333	187.137	139.796	−255.673	104.151	−667.375	−435.200	−207.799	4.934
	2250.00	60.626	188.496	140.863	−252.649	107.175	−676.766	−434.858	−202.635	4.704

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	Mi1	Mi1	MPT= 2250.

LaSe[g] LANTHANUM MONOSELENIDE (GAS) 217.865

Phase	T	C_p	S	–(G–H298)/T	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	35.739	263.074	263.074	187.443	0.000	109.008	187.443	138.572	–24.277
	300.00	35.759	263.295	263.074	187.509	0.066	108.521	187.412	138.269	–24.075
	400.00	36.460	273.693	264.487	191.125	3.682	81.648	185.634	122.151	–15.951
	500.00	36.787	281.868	267.175	194.789	7.346	53.855	177.739	106.590	–11.135
	600.00	36.966	288.592	270.201	198.478	11.035	25.323	174.792	92.636	–8.065
	700.00	37.076	294.299	273.246	202.180	14.737	–3.829	172.144	79.151	–5.906
	800.00	37.148	299.255	276.194	205.892	18.449	–33.512	169.378	66.054	–4.313
	900.00	37.199	303.633	279.004	209.609	22.166	–63.661	166.483	53.311	–3.094
	1000.00	37.236	307.555	281.667	213.331	25.888	–94.224	163.453	40.897	–2.136
	1100.00	37.265	311.105	284.184	217.056	29.613	–125.160	106.973	33.748	–1.603
	1200.00	37.288	314.349	286.565	220.784	33.341	–156.435	95.560	27.398	–1.193
	1300.00	37.306	317.334	288.818	224.513	37.070	–188.021	93.803	21.790	–0.876
	1400.00	37.322	320.099	290.955	228.245	40.802	–219.894	92.059	16.316	–0.609
	1500.00	37.335	322.675	292.985	231.978	44.535	–252.034	90.330	10.966	–0.382
	1600.00	37.346	325.085	294.917	235.712	48.269	–284.424	88.614	5.731	–0.187
	1700.00	37.357	327.349	296.758	239.447	52.004	–317.046	86.912	0.603	–0.019
	1800.00	37.366	329.485	298.518	243.183	55.740	–349.889	85.224	–4.425	0.128
	1900.00	37.374	331.505	300.201	246.920	59.477	–382.939	83.549	–9.360	0.257
	2000.00	37.382	333.422	301.815	250.658	63.215	–416.187	81.889	–14.207	0.371
	2100.00	37.389	335.246	303.364	254.396	66.953	–449.621	80.241	–18.971	0.472
	2200.00	37.395	336.986	304.853	258.136	70.693	–483.233	78.608	–23.657	0.562

References

Phase	H / S	C_p
GAS	Mi1	Mi1

514.691

LANTHANUM SELENIDE La2Se3

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	125.573	202.213	202.213	−933.032	0.000	−993.322	−933.032	−921.593	161.459
	300.00	125.604	202.990	202.215	−932.800	0.232	−993.697	−933.041	−921.522	160.451
	400.00	127.235	239.347	207.161	−920.158	12.874	−1015.896	−933.854	−917.577	119.823
	500.00	128.867	267.914	216.555	−907.353	25.679	−1041.310	−952.977	−913.103	95.391
	600.00	130.499	291.554	227.141	−894.384	38.648	−1069.316	−956.795	−904.769	78.767
	700.00	132.131	311.793	237.822	−881.253	51.779	−1099.508	−959.879	−895.855	66.850
	800.00	133.762	329.543	248.200	−867.958	65.074	−1131.592	−963.054	−886.493	57.882
	900.00	135.394	345.392	258.134	−854.500	78.532	−1165.353	−966.335	−876.727	50.884
	1000.00	137.026	359.742	267.589	−840.879	92.153	−1200.621	−969.732	−866.590	45.266
	1100.00	138.658	372.878	276.572	−827.095	105.937	−1237.261	−1133.185	−841.244	39.947
	1200.00	140.290	385.013	285.109	−813.148	119.884	−1275.163	−1151.587	−814.284	35.445
	1300.00	141.921	396.306	293.233	−799.037	133.995	−1314.235	−1150.506	−786.217	31.591
	1400.00	143.553	406.884	300.977	−784.763	148.269	−1354.400	−1149.226	−758.242	28.290
	1500.00	145.185	416.843	308.373	−770.327	162.705	−1395.592	−1147.745	−730.365	25.434
	1600.00	146.817	426.265	315.450	−755.727	177.305	−1437.751	−1146.064	−702.593	22.937
	1700.00	148.448	435.215	322.234	−740.963	192.069	−1480.829	−1144.181	−674.933	20.738
	1800.00	150.080	443.746	328.749	−726.037	206.995	−1524.780	−1142.097	−647.389	18.787
	1900.00	151.712	451.905	335.018	−710.947	222.085	−1569.566	−1139.811	−619.967	17.044

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	Mi1	Mi1	MPT= 1900.

La2Te3 LANTHANUM TELLURIDE 660.611

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	132.148	231.626	231.626	−784.500	0.000	−853.559	−784.500	−775.356	135.839
	300.00	132.173	232.444	231.629	−784.256	0.244	−853.989	−784.499	−775.299	134.992
	400.00	133.511	270.651	236.829	−770.971	13.529	−879.232	−784.722	−772.215	100.841
	500.00	134.850	300.587	246.693	−757.553	26.947	−907.847	−785.520	−769.008	80.338
	600.00	136.189	325.291	257.793	−744.001	40.499	−939.176	−787.592	−765.522	66.645
	700.00	137.528	346.385	268.979	−730.315	54.185	−972.785	−789.622	−761.693	56.838
	800.00	138.867	364.837	279.832	−716.496	68.004	−1008.365	−845.300	−751.881	49.093
	900.00	140.206	381.271	290.206	−702.542	81.958	−1045.686	−848.839	−739.993	42.948
	1000.00	141.545	396.112	300.067	−688.454	96.046	−1084.567	−852.522	−727.702	38.011
	1100.00	142.884	409.666	309.423	−674.233	110.267	−1124.865	−856.357	−715.036	33.954
	1200.00	144.222	422.155	318.304	−659.878	124.622	−1166.464	−879.444	−701.562	30.538
	1300.00	145.561	433.752	326.743	−645.389	139.111	−1209.267	−883.113	−686.589	27.587
	1400.00	146.900	444.589	334.778	−630.765	153.735	−1253.189	−1025.967	−663.864	24.769
	1500.00	148.239	454.769	342.442	−616.008	168.492	−1298.162	−1024.647	−638.045	22.219
	1600.00	149.578	464.379	349.765	−601.118	183.382	−1344.124	−1023.169	−612.319	19.990
	1700.00	150.917	473.487	356.777	−586.093	198.407	−1391.022	−1021.543	−586.690	18.027
	1760.00	151.720	478.736	360.846	−577.014	207.486	−1419.589	−1020.497	−571.360	16.957

References

Phase	H / S	C_p	Remarks	
SOL	Mi1	Mi1	Mi1	MPT= 1760.

6.941

LITHIUM

Li

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	24.623	29.080	29.080	0.000	0.000	–8.670	0.000	0.000	0.000
	300.00	24.677	29.232	29.080	0.046	0.046	–8.724	0.000	0.000	0.000
	400.00	27.610	36.733	30.083	2.660	2.660	–12.033	0.000	0.000	0.000
	453.69	29.185	40.308	31.084	4.185	4.185	–14.103	0.000	0.000	0.000
			6.612		3.000					
LIQ	453.69	30.759	46.920	31.084	7.185	7.185	–14.103	0.000	0.000	0.000
	500.00	30.184	49.881	32.691	8.595	8.595	–16.345	0.000	0.000	0.000
	600.00	29.459	55.312	36.024	11.573	11.573	–21.614	0.000	0.000	0.000
	700.00	29.115	59.824	39.111	14.499	14.499	–27.377	0.000	0.000	0.000
	800.00	28.955	63.700	41.948	17.402	17.402	–33.558	0.000	0.000	0.000
	900.00	28.887	67.105	44.557	20.293	20.293	–40.102	0.000	0.000	0.000
	1000.00	28.860	70.147	46.967	23.180	23.180	–46.967	0.000	0.000	0.000
	1100.00	28.847	72.897	49.201	26.066	26.066	–54.121	0.000	0.000	0.000
	1200.00	28.831	75.407	51.282	28.950	28.950	–61.538	0.000	0.000	0.000
	1300.00	28.702	77.708	53.228	31.824	31.824	–69.196	0.000	0.000	0.000
	1400.00	28.619	79.832	55.053	34.690	34.690	–77.074	0.000	0.000	0.000
	1500.00	28.535	81.803	56.771	37.548	37.548	–85.157	0.000	0.000	0.000
	1600.00	28.451	83.642	58.394	40.397	40.397	–93.430	0.000	0.000	0.000
	1620.12	28.434	83.998	58.710	40.969	40.969	–95.117	0.000	0.000	0.000

References

Phase	H / S	C_p	Remarks
SOL	Ja2	Ja1	
LIQ	Ja1	Ja1	Ja2

BPT=1620.12 GAS(Li),L=145.843kJ / NBPT=1620. GAS (Li+Li2)

Li[g] LITHIUM (GAS) 6.941

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	20.786	138.781	138.781	159.300	0.000	117.922	159.300	126.593	−22.179
	300.00	20.786	138.910	138.781	159.338	0.038	117.666	159.293	126.390	−22.006
	400.00	20.786	144.889	139.597	161.417	2.117	103.461	158.757	115.495	−15.082
	500.00	20.786	149.528	141.136	163.496	4.196	88.732	154.901	105.077	−10.977
	600.00	20.786	153.317	142.860	165.574	6.274	73.584	154.002	95.198	−8.288
	700.00	20.786	156.522	144.589	167.653	8.353	58.088	153.154	85.465	−6.377
	800.00	20.786	159.297	146.258	169.732	10.432	42.294	152.330	75.852	−4.953
	900.00	20.786	161.745	147.845	171.810	12.510	26.239	151.517	66.341	−3.850
	1000.00	20.786	163.935	149.347	173.889	14.589	9.953	150.708	56.920	−2.973
	1100.00	20.786	165.917	150.764	175.967	16.667	−6.541	149.902	47.580	−2.259
	1200.00	20.786	167.725	152.104	178.046	18.746	−23.224	149.096	38.314	−1.668
	1300.00	20.786	169.389	153.370	180.125	20.825	−40.081	148.301	29.115	−1.170
	1400.00	20.786	170.929	154.570	182.203	22.903	−57.098	147.513	19.976	−0.745
	1500.00	20.797	172.364	155.709	184.282	24.982	−74.264	146.735	10.893	−0.379
	1600.00	20.807	173.706	156.792	186.362	27.062	−91.568	145.965	1.863	−0.061
	1700.00	20.817	174.968	157.825	188.444	29.144	−109.002	0.000	0.000	0.000
	1800.00	20.827	176.158	158.811	190.526	31.226	−126.559	0.000	0.000	0.000
	1900.00	20.837	177.285	159.753	192.609	33.309	−144.232	0.000	0.000	0.000
	2000.00	20.847	178.354	160.657	194.693	35.393	−162.014	0.000	0.000	0.000

References

Phase	H / S	C_p
GAS	Ja2	Ja1

13.882

LITHIUM (GAS) **Li2**[g]

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	36.064	196.967	196.967	210.874	0.000	152.148	210.874	169.489	–29.694
	300.00	36.087	197.190	196.967	210.941	0.067	151.784	210.850	169.232	–29.466
	400.00	36.957	207.705	198.395	214.598	3.724	131.516	209.278	155.583	–20.317
	500.00	37.434	216.008	201.116	218.320	7.446	110.316	201.130	143.007	–14.940
	600.00	37.757	222.863	204.186	222.080	11.206	88.362	198.935	131.591	–11.456
	700.00	38.007	228.702	207.282	225.868	14.994	65.777	196.870	120.532	–8.994
	800.00	38.218	233.791	210.284	229.680	18.806	42.647	194.877	109.763	–7.167
	900.00	38.407	238.304	213.151	233.511	22.637	19.038	192.925	99.241	–5.760
	1000.00	38.581	242.360	215.873	237.361	26.487	–4.999	191.000	88.935	–4.645
	1100.00	38.746	246.045	218.451	241.227	30.353	–29.422	189.096	78.821	–3.743
	1200.00	38.906	249.423	220.893	245.110	34.236	–54.198	187.211	68.879	–2.998
	1300.00	39.060	252.543	223.209	249.008	38.134	–79.298	185.360	59.094	–2.374
	1400.00	39.212	255.443	225.409	252.922	42.048	–104.699	183.542	49.449	–1.845
	1500.00	39.361	258.154	227.503	256.851	45.977	–130.380	181.755	39.934	–1.391
	1600.00	39.509	260.699	229.499	260.794	49.920	–156.324	180.000	30.537	–0.997
	1700.00	39.655	263.098	231.405	264.752	53.878	–182.515	–112.135	35.489	–1.090
	1800.00	39.800	265.369	233.230	268.725	57.851	–208.939	–112.327	44.179	–1.282
	1900.00	39.944	267.525	234.978	272.712	61.838	–235.585	–112.506	52.878	–1.454
	2000.00	40.087	269.577	236.657	276.714	65.840	–262.441	–112.673	61.587	–1.608
	2100.00	40.230	271.537	238.272	280.729	69.855	–289.497	–112.827	70.304	–1.749
	2200.00	40.372	273.411	239.827	284.760	73.886	–316.746	–112.969	79.028	–1.876

References

Phase	H / S	C_p
GAS	Ja1	Ja1

LiAlF4[g] LITHIUM TETRAFLUOROALUMINATE (GAS) 109.916

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	100.693	326.497	326.497	−1853.512	0.000	−1950.857	−1853.512	−1812.830	317.600
	300.00	101.001	327.121	326.499	−1853.325	0.187	−1951.462	−1853.532	−1812.578	315.598
	400.00	112.231	357.921	330.622	−1842.593	10.919	−1985.761	−1854.347	−1798.794	234.898
	500.00	118.096	383.652	338.729	−1831.050	22.462	−2022.876	−1858.107	−1784.514	186.427
	600.00	121.849	405.536	348.086	−1819.042	34.470	−2062.363	−1858.777	−1769.730	154.069
	700.00	124.605	424.535	357.680	−1806.713	46.799	−2103.888	−1859.343	−1754.843	130.948
	800.00	126.830	441.323	367.106	−1794.138	59.374	−2147.197	−1859.884	−1739.878	113.602
	900.00	127.866	456.309	376.200	−1781.413	72.099	−2192.092	−1860.535	−1724.839	100.107
	1000.00	128.807	469.833	384.898	−1768.577	84.935	−2238.410	−1871.891	−1708.961	89.267
	1100.00	129.508	482.144	393.187	−1755.660	97.852	−2286.018	−1872.447	−1692.641	80.377
	1200.00	130.044	493.436	401.077	−1742.681	110.831	−2334.805	−1872.984	−1676.271	72.966
	1300.00	130.466	503.863	408.588	−1729.655	123.857	−2384.677	−1873.500	−1659.858	66.694
	1400.00	130.803	513.544	415.743	−1716.591	136.921	−2435.553	−1874.002	−1643.405	61.316
	1500.00	131.079	522.578	422.568	−1703.496	150.016	−2487.364	−1874.494	−1626.916	56.654
	1600.00	131.308	531.046	429.086	−1690.377	163.135	−2540.049	−1874.978	−1610.395	52.574
	1700.00	131.500	539.012	435.320	−1677.236	176.276	−2593.556	−2020.662	−1586.724	48.754
	1800.00	131.664	546.533	441.292	−1664.078	189.434	−2647.837	−2020.386	−1561.206	45.305
	1900.00	131.805	553.656	447.020	−1650.904	202.608	−2702.850	−2020.116	−1535.703	42.219
	2000.00	131.927	560.419	452.522	−1637.717	215.795	−2758.556	−2019.853	−1510.215	39.443
	2100.00	132.035	566.859	457.815	−1624.519	228.993	−2814.923	−2019.599	−1484.739	36.931
	2200.00	132.131	573.003	462.912	−1611.311	242.201	−2871.918	−2019.352	−1459.275	34.648

References

Phase	H / S	C_p
GAS	Ja2	Ja1

161.795

TRILITHIUM HEXAFLUOROALUMINATE **Li3AlF6**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL−B	298.15	202.512	187.891	187.891	−3383.601	0.000	−3439.621	−3383.601	−3223.790	564.795
	300.00	203.129	189.145	187.895	−3383.226	0.375	−3439.969	−3383.581	−3222.798	561.139
	400.00	229.852	251.521	196.218	−3361.480	22.121	−3462.088	−3381.826	−3169.437	413.886
	500.00	248.158	304.885	212.745	−3337.531	46.070	−3489.974	−3388.413	−3115.694	325.494
	600.00	262.246	351.420	232.062	−3311.986	71.615	−3522.838	−3384.975	−3061.453	266.523
	700.00	274.070	392.755	252.120	−3285.157	98.444	−3560.085	−3380.442	−3007.877	224.451
	748.00	279.243	411.103	261.738	−3271.876	111.725	−3579.381	−3377.944	−2982.413	208.269
			2.797		2.092					
SOL−C	748.00	284.512	413.900	261.738	−3269.784	113.817	−3579.381	−3375.852	−2982.413	208.269
	800.00	284.512	433.021	272.257	−3254.989	128.612	−3601.406	−3372.802	−2955.165	192.953
	848.00	284.512	449.599	281.830	−3241.333	142.268	−3622.593	−3370.054	−2930.188	180.492
			1.480		1.255					
SOL−D	848.00	294.972	451.079	281.830	−3240.078	143.523	−3622.593	−3368.799	−2930.188	180.492
	900.00	294.972	468.634	292.121	−3224.739	158.862	−3646.510	−3365.359	−2903.396	168.509
	978.00	294.972	493.151	307.190	−3201.731	181.870	−3684.033	−3370.959	−2863.063	152.915
			0.427		0.418					
SOL−E	978.00	305.432	493.578	307.190	−3201.313	182.288	−3684.033	−3370.541	−2863.063	152.915
	1000.00	305.432	500.373	311.366	−3194.594	189.007	−3694.967	−3368.861	−2851.666	148.956
	1058.00	305.432	517.593	322.204	−3176.879	206.722	−3724.493	−3364.449	−2821.794	139.315
			81.465		86.190					
LIQ	1058.00	359.824	599.058	322.204	−3090.689	292.912	−3724.493	−3278.259	−2821.794	139.315
	1100.00	359.824	613.066	333.044	−3075.576	308.025	−3749.949	−3272.793	−2803.781	133.140
	1200.00	359.824	644.375	357.702	−3039.594	344.007	−3812.844	−3259.822	−2761.716	120.214
	1300.00	359.824	673.176	380.877	−3003.611	379.990	−3878.741	−3246.878	−2720.732	109.320
	1400.00	359.824	699.842	402.719	−2967.629	415.972	−3947.408	−3233.956	−2680.745	100.020
	1500.00	359.824	724.667	423.365	−2931.647	451.954	−4018.648	−3221.053	−2641.680	91.991
	1600.00	359.824	747.890	442.929	−2895.664	487.937	−4092.288	−3208.163	−2603.475	84.995
	1700.00	359.824	769.704	461.516	−2859.682	523.919	−4168.179	−3630.900	−2544.715	78.190
	1800.00	359.824	790.271	479.215	−2823.699	559.902	−4246.187	−3615.776	−2481.258	72.004
	1900.00	359.824	809.726	496.103	−2787.717	595.884	−4326.196	−3600.687	−2418.641	66.493
	2000.00	359.824	828.182	512.249	−2751.735	631.866	−4408.099	−3585.629	−2356.818	61.554

References

Phase	H / S	C_p
SOL−B	Ja1	Ja1
SOL−C	Ja1	Ja1
SOL−D	Ja1	Ja1
SOL−E	Ja1	Ja1
LIQ	Ja1	Ja1

Li3AsO4 — LITHIUM ARSENATE — 159.742

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	161.844	173.134	173.134	−1702.386	0.000	−1754.006	−1702.386	−1595.020	279.441
	300.00	162.149	174.136	173.137	−1702.086	0.300	−1754.327	−1702.377	−1594.354	277.602
	400.00	174.635	222.646	179.666	−1685.194	17.192	−1774.253	−1701.777	−1558.433	203.510
	500.00	183.134	262.571	192.372	−1667.287	35.099	−1798.572	−1710.359	−1521.735	158.975
	600.00	190.063	296.588	206.975	−1648.618	53.768	−1826.571	−1709.565	−1484.074	129.200
	700.00	196.251	326.357	221.946	−1629.298	73.088	−1857.748	−1708.212	−1446.593	107.946
	800.00	202.044	352.945	236.688	−1609.381	93.005	−1891.737	−1706.408	−1409.337	92.020
	900.00	207.607	377.065	250.966	−1588.897	113.489	−1928.255	−1704.192	−1372.332	79.648
	980.00	211.953	394.927	261.997	−1572.114	130.272	−1959.143	−1702.117	−1342.921	71.579

References

Phase	H / S	C_p
SOL	G1	G1

LiBO2 — LITHIUM METABORATE — 49.751

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	60.365	51.714	51.714	−1019.222	0.000	−1034.641	−1019.222	−963.068	168.725
	300.00	60.624	52.088	51.715	−1019.110	0.112	−1034.737	−1019.231	−962.719	167.624
	400.00	71.145	71.097	54.236	−1012.478	6.744	−1040.916	−1019.549	−943.827	123.251
	500.00	78.603	87.802	59.313	−1004.977	14.245	−1048.879	−1022.773	−924.565	96.589
	600.00	85.057	102.713	65.325	−996.789	22.433	−1058.417	−1022.703	−904.923	78.781
	700.00	91.097	116.282	71.649	−987.979	31.243	−1069.377	−1022.229	−885.324	66.064
	800.00	96.939	128.829	78.022	−978.576	40.646	−1081.640	−1021.348	−865.822	56.532
	900.00	102.675	140.579	84.327	−968.595	50.627	−1095.116	−1020.046	−846.455	49.127
	1000.00	108.351	151.691	90.512	−958.043	61.179	−1109.734	−1018.306	−827.256	43.211
	1100.00	113.989	162.283	96.559	−946.926	72.296	−1125.437	−1016.113	−808.253	38.381
	1117.00	114.945	164.038	97.573	−944.980	74.242	−1128.211	−1015.695	−805.044	37.647
			30.266		33.807					
LIQ	1117.00	144.310	194.304	97.573	−911.173	108.049	−1128.211	−981.888	−805.044	37.647
	1200.00	144.310	204.647	104.625	−899.195	120.027	−1144.772	−977.404	−792.067	34.478
	1300.00	144.310	216.198	112.769	−884.764	134.458	−1165.822	−972.072	−776.839	31.214
	1400.00	144.310	226.893	120.544	−870.333	148.889	−1187.983	−966.810	−762.018	28.431
	1500.00	144.310	236.849	127.969	−855.902	163.320	−1211.176	−961.612	−747.572	26.033
	1600.00	144.310	246.163	135.069	−841.471	177.751	−1235.332	−956.473	−733.471	23.945
	1700.00	144.310	254.912	141.863	−827.040	192.182	−1260.390	−1096.597	−712.568	21.895
	1800.00	144.310	263.160	148.375	−812.609	206.613	−1286.297	−1090.819	−690.146	20.028
	1900.00	144.310	270.963	154.624	−798.178	221.044	−1313.007	−1085.102	−668.042	18.366
	1990.60	144.310	277.685	160.073	−785.103	234.119	−1337.863	−1079.974	−648.276	17.011

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja1	BPT= 1990.6, L= 265.7 kJ

49.751

LITHIUM METABORATE (GAS) **LiBO2[g]**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	57.252	274.580	274.580	−646.846	0.000	−728.712	−646.846	−657.139	115.128
	300.00	57.369	274.934	274.581	−646.740	0.106	−729.220	−646.861	−657.203	114.429
	400.00	62.813	292.225	276.901	−640.717	6.129	−757.607	−647.788	−660.517	86.255
	500.00	66.771	306.689	281.451	−634.227	12.619	−787.572	−652.023	−663.258	69.290
	600.00	69.739	319.137	286.719	−627.395	19.451	−818.877	−653.309	−665.383	57.927
	700.00	72.048	330.068	292.147	−620.301	26.545	−851.349	−654.551	−667.297	49.794
	800.00	73.880	339.813	297.507	−613.001	33.845	−884.852	−655.774	−669.034	43.683
	900.00	75.337	348.602	302.704	−605.538	41.308	−919.279	−656.989	−670.618	38.922
	1000.00	76.478	356.601	307.700	−597.945	48.901	−954.546	−658.207	−672.068	35.105
	1100.00	77.416	363.936	312.483	−590.248	56.598	−990.578	−659.435	−673.394	31.977
	1200.00	78.179	370.706	317.057	−582.467	64.379	−1027.314	−660.676	−674.609	29.365
	1300.00	78.805	376.989	321.428	−574.617	72.229	−1064.703	−661.925	−675.719	27.151
	1400.00	79.326	382.849	325.608	−566.710	80.136	−1102.698	−663.186	−676.733	25.249
	1500.00	79.761	388.337	329.609	−558.755	88.091	−1141.260	−664.464	−677.656	23.598
	1600.00	80.128	393.497	333.443	−550.760	96.086	−1180.354	−665.762	−678.493	22.151
	1700.00	80.441	398.364	337.120	−542.731	104.115	−1219.949	−812.288	−672.128	20.652
	1800.00	80.709	402.970	340.651	−534.673	112.173	−1260.018	−812.883	−663.866	19.265
	1900.00	80.940	407.340	344.047	−526.590	120.256	−1300.536	−813.514	−655.571	18.023
	2000.00	81.140	411.497	347.317	−518.486	128.360	−1341.479	−814.184	−647.241	16.904
	2100.00	81.315	415.460	350.468	−510.363	136.483	−1382.828	−814.895	−638.876	15.891
	2200.00	81.469	419.246	353.509	−502.224	144.622	−1424.565	−815.647	−630.477	14.969
	2300.00	81.604	422.871	356.446	−494.070	152.776	−1466.672	−816.442	−622.042	14.127
	2400.00	81.724	426.346	359.287	−485.903	160.943	−1509.134	−867.540	−612.504	13.331
	2500.00	81.830	429.685	362.036	−477.726	169.120	−1551.937	−868.501	−601.857	12.575

References

Phase	H / S	C_p
GAS	Ja1	Ja1

72.948

LITHIUM TRIFLUOROBERYLLATE **LiBeF3**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	91.817	89.245	89.245	−1651.843	0.000	−1678.451	−1651.843	−1576.272	276.156
	300.00	92.049	89.813	89.246	−1651.673	0.170	−1678.617	−1651.836	−1575.803	274.372
	400.00	104.600	118.013	93.007	−1641.840	10.003	−1689.046	−1651.277	−1550.532	202.479
	500.00	117.152	142.702	100.522	−1630.753	21.090	−1702.104	−1653.275	−1525.145	159.331
	600.00	129.704	165.171	109.450	−1618.410	33.433	−1717.513	−1651.389	−1499.679	130.559
	650.00	135.980	175.801	114.147	−1611.768	40.075	−1726.039	−1650.046	−1487.089	119.504

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1	Ja1	MPT= 650.

LiBeF3[g] LITHIUM TRIFLUOROBERYLLATE (GAS) 72.948

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	61.124	267.885	267.885	−887.008	0.000	−966.878	−887.008	−864.698	151.492
	300.00	61.359	268.264	267.887	−886.895	0.113	−967.374	−887.058	−864.560	150.533
	400.00	73.647	287.655	270.447	−880.125	6.883	−995.187	−889.561	−856.673	111.870
	500.00	82.544	305.109	275.665	−872.286	14.722	−1024.841	−894.808	−847.882	88.578
	600.00	88.548	320.725	281.898	−863.712	23.296	−1056.147	−896.691	−838.313	72.982
	700.00	92.708	334.705	288.462	−854.637	32.371	−1088.931	−898.257	−828.456	61.820
	800.00	95.699	347.290	295.042	−845.209	41.799	−1123.042	−899.631	−818.389	53.435
	900.00	97.926	358.697	301.491	−835.523	51.485	−1158.350	−900.889	−808.157	46.904
	1000.00	99.631	369.106	307.740	−825.641	61.367	−1194.748	−902.088	−797.789	41.672
	1100.00	100.968	378.667	313.759	−815.609	71.399	−1232.143	−903.280	−787.302	37.386
	1200.00	102.034	387.500	319.541	−805.457	81.551	−1270.457	−904.484	−776.706	33.809
	1300.00	102.896	395.702	325.088	−795.209	91.799	−1309.622	−905.710	−766.008	30.779
	1400.00	103.598	403.354	330.408	−784.883	102.125	−1349.579	−906.974	−755.214	28.177
	1500.00	104.171	410.522	335.513	−774.494	112.514	−1390.277	−908.287	−744.329	25.920
	1600.00	104.640	417.261	340.413	−764.052	122.956	−1431.669	−917.383	−733.154	23.935
	1700.00	105.019	423.616	345.122	−753.569	133.439	−1473.716	−1063.547	−714.489	21.954
	1800.00	105.322	429.628	349.652	−743.051	143.957	−1516.381	−1063.749	−693.951	20.138
	1900.00	105.558	435.329	354.012	−732.506	154.502	−1559.631	−1063.963	−673.401	18.513
	2000.00	105.734	440.748	358.215	−721.941	165.067	−1603.437	−1064.192	−652.839	17.050

References

Phase	H / S	C_p
GAS	Ja1	Ja1

98.888

DILITHIUM TETRAFLUOROBERYLLATE **Li2BeF4**

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	135.259	130.583	130.583	−2273.586	0.000	−2312.519	−2273.586	−2171.438	380.427
	300.00	135.535	131.420	130.585	−2273.336	0.250	−2312.762	−2273.573	−2170.804	377.971
	400.00	150.444	172.453	136.079	−2259.037	14.549	−2328.018	−2272.769	−2136.662	279.019
	500.00	165.354	207.625	146.947	−2243.247	30.339	−2347.059	−2277.681	−2102.142	219.609
	600.00	180.264	239.091	159.724	−2225.966	47.620	−2369.420	−2275.571	−2067.210	179.967
	700.00	195.173	267.998	173.152	−2207.194	66.392	−2394.793	−2272.142	−2032.736	151.685
	732.20	199.974	276.883	177.519	−2200.832	72.754	−2403.566	−2270.756	−2021.755	144.231
			60.086		43.995					
LIQ	732.20	232.086	336.969	177.519	−2156.837	116.749	−2403.566	−2226.761	−2021.755	144.231
	800.00	232.086	357.522	191.917	−2141.102	132.484	−2427.119	−2221.557	−2003.006	130.783
	900.00	232.086	384.858	211.866	−2117.893	155.693	−2464.265	−2214.008	−1976.142	114.692
	1000.00	232.086	409.311	230.409	−2094.684	178.902	−2503.995	−2206.608	−1950.111	101.863
	1100.00	232.086	431.431	247.694	−2071.476	202.110	−2546.050	−2199.361	−1924.813	91.402
	1200.00	232.086	451.625	263.859	−2048.267	225.319	−2590.217	−2192.257	−1900.169	82.712
	1300.00	232.086	470.202	279.027	−2025.058	248.528	−2636.321	−2185.270	−1876.112	75.383
	1400.00	232.086	487.401	293.304	−2001.850	271.736	−2684.212	−2178.399	−1852.589	69.121
	1500.00	232.086	503.414	306.784	−1978.641	294.945	−2733.762	−2171.639	−1829.553	63.711
	1600.00	232.086	518.392	319.546	−1955.432	318.154	−2784.860	−2172.712	−1806.765	58.985
	1700.00	232.086	532.462	331.661	−1932.224	341.362	−2837.410	−2456.098	−1769.867	54.381
	1800.00	232.086	545.728	343.189	−1909.015	364.571	−2891.326	−2447.598	−1729.746	50.196
	1900.00	232.086	558.276	354.182	−1885.806	387.780	−2946.532	−2439.142	−1690.097	46.464
	2000.00	232.086	570.181	364.687	−1862.598	410.988	−3002.959	−2430.728	−1650.891	43.117

References

Phase	H / S	C_p
SOL	Ja1	Ja1
LIQ	Ja1	Ja1

LiBr LITHIUM BROMIDE 86.845

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f [−]
		[	J / (K mol)	]	[	kJ / mol	]			
SOL	298.15	48.941	74.057	74.057	−350.912	0.000	−372.992	−350.912	−341.631	59.852
	300.00	48.970	74.360	74.058	−350.821	0.091	−373.129	−350.937	−341.574	59.473
	400.00	51.237	88.749	76.004	−345.814	5.098	−381.314	−365.785	−335.372	43.795
	500.00	53.422	100.416	79.755	−340.582	10.330	−390.790	−368.334	−327.518	34.216
	600.00	56.094	110.379	84.047	−335.113	15.799	−401.340	−367.702	−319.408	27.807
	700.00	59.765	119.288	88.455	−329.329	21.583	−412.830	−366.712	−311.432	23.239
	800.00	64.455	127.564	92.831	−323.126	27.786	−425.177	−365.285	−303.627	19.825
	823.00	65.654	129.408	93.828	−321.629	29.283	−428.132	−364.886	−301.860	19.159
			21.453		17.656					
LIQ	823.00	65.270	150.861	93.828	−303.973	46.939	−428.132	−347.230	−301.860	19.159
	900.00	65.270	156.699	98.961	−298.948	51.964	−439.977	−345.877	−297.676	17.277
	1000.00	65.270	163.576	105.085	−292.420	58.492	−455.997	−344.120	−292.415	15.274
	1100.00	65.270	169.797	110.689	−285.893	65.019	−472.670	−342.365	−287.330	13.644
	1200.00	65.270	175.476	115.855	−279.366	71.546	−489.938	−340.611	−282.404	12.293
	1300.00	65.270	180.701	120.645	−272.839	78.073	−507.750	−338.852	−277.624	11.155
	1400.00	65.270	185.538	125.109	−266.312	84.600	−526.065	−337.086	−272.981	10.185
	1500.00	65.270	190.041	129.290	−259.785	91.127	−544.847	−335.316	−268.464	9.349
	1600.00	65.270	194.253	133.220	−253.258	97.654	−564.064	−333.539	−264.065	8.621
	1609.10	65.270	194.624	133.566	−252.664	98.248	−565.833	−333.377	−263.670	8.559

References

Phase	H / S	C_p	Remarks
SOL	Ja1	Ja1	
LIQ	Ja1	Ja1	Ja2 BPT= 1562. GAS (LiBr + Li2Br2) / 1609.1 GAS (LiBr)

86.845

LITHIUM BROMIDE (GAS) **LiBr**[g]

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	33.879	224.343	224.343	−153.971	0.000	−220.859	−153.971	−189.498	33.199
	300.00	33.923	224.552	224.343	−153.908	0.063	−221.274	−154.024	−189.718	33.033
	400.00	35.470	234.553	225.696	−150.428	3.543	−244.250	−170.399	−198.308	25.896
	500.00	36.231	242.558	228.295	−146.839	7.132	−268.119	−174.592	−204.847	21.400
	600.00	36.683	249.207	231.242	−143.192	10.779	−292.716	−175.781	−210.784	18.350
	700.00	36.989	254.886	234.224	−139.508	14.463	−317.928	−176.891	−216.530	16.158
	800.00	37.218	259.841	237.123	−135.797	18.174	−343.669	−177.956	−222.119	14.503
	900.00	37.401	264.235	239.896	−132.066	21.905	−369.877	−178.995	−227.577	13.208
	1000.00	37.556	268.184	242.531	−128.318	25.653	−396.502	−180.017	−232.920	12.166
	1100.00	37.693	271.770	245.028	−124.555	29.416	−423.502	−181.026	−238.161	11.309
	1200.00	37.817	275.055	247.396	−120.779	33.192	−450.846	−182.024	−243.311	10.591
	1300.00	37.932	278.087	249.641	−116.992	36.979	−478.505	−183.004	−248.379	9.980
	1400.00	38.041	280.902	251.775	−113.193	40.778	−506.456	−183.967	−253.371	9.453
	1500.00	38.146	283.530	253.805	−109.384	44.587	−534.679	−184.914	−258.296	8.995
	1600.00	38.246	285.995	255.741	−105.564	48.407	−563.156	−185.845	−263.157	8.591
	1700.00	38.344	288.317	257.589	−101.735	52.236	−591.873	−331.966	−260.841	8.015
	1800.00	38.440	290.511	259.358	−97.895	56.076	−620.815	−332.115	−256.652	7.448
	1900.00	38.534	292.592	261.053	−94.047	59.924	−649.972	−332.259	−252.456	6.941
	2000.00	38.627	294.571	262.680	−90.189	63.782	−679.330	−332.396	−248.252	6.484

References

Phase	H / S	C_p
GAS	Ja1	Ja1

Li2Br2[g] DILITHIUM DIBROMIDE (GAS) 173.690

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
GAS	298.15	74.978	314.537	314.537	−500.825	0.000	−594.604	−500.825	−531.882	93.184
	300.00	75.076	315.001	314.538	−500.686	0.139	−595.187	−500.917	−532.075	92.642
	400.00	78.505	337.139	317.533	−492.983	7.842	−627.838	−532.925	−535.955	69.989
	500.00	80.102	354.848	323.285	−485.044	15.781	−662.468	−540.548	−535.924	55.988
	600.00	80.977	369.537	329.805	−476.986	23.839	−698.708	−542.164	−534.844	46.562
	700.00	81.511	382.063	336.398	−468.859	31.966	−736.303	−543.626	−533.507	39.811
	800.00	81.863	392.971	342.802	−460.690	40.135	−775.067	−545.008	−531.967	34.734
	900.00	82.110	402.629	348.923	−452.490	48.335	−814.856	−546.350	−530.255	30.775
	1000.00	82.292	411.290	354.734	−444.270	56.555	−855.559	−547.669	−528.396	27.601
	1100.00	82.430	419.140	360.238	−436.033	64.792	−897.087	−548.976	−526.406	24.997
	1200.00	82.540	426.317	365.450	−427.785	73.040	−939.365	−550.275	−524.296	22.822
	1300.00	82.629	432.927	370.390	−419.526	81.299	−982.331	−551.551	−522.080	20.977
	1400.00	82.703	439.053	375.078	−411.259	89.566	−1025.934	−552.808	−519.765	19.393
	1500.00	82.765	444.762	379.536	−402.986	97.839	−1070.128	−554.047	−517.362	18.016
	1600.00	82.820	450.105	383.781	−394.707	106.118	−1114.874	−555.268	−514.876	16.809
	1700.00	82.868	455.127	387.832	−386.422	114.403	−1160.139	−846.885	−498.074	15.304
	1800.00	82.911	459.865	391.703	−378.133	122.692	−1205.890	−846.573	−477.564	13.859
	1900.00	82.950	464.349	395.410	−369.840	130.985	−1252.103	−846.264	−457.072	12.566
	2000.00	82.986	468.605	398.964	−361.543	139.282	−1298.753	−845.959	−436.597	11.403

References

Phase	H / S	C_p
GAS	Ja1	Ja1

73.891

LITHIUM CARBONATE

Li2CO3

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
SOL−A	298.15	96.232	90.169	90.169	−1216.038	0.000	−1242.922	−1216.038	−1132.123	198.343
	300.00	96.567	90.766	90.171	−1215.860	0.178	−1243.089	−1216.048	−1131.603	197.030
	400.00	112.173	120.737	94.153	−1205.404	10.634	−1253.699	−1216.315	−1103.399	144.089
	500.00	128.951	147.511	102.185	−1193.375	22.663	−1267.130	−1222.075	−1074.574	112.260
	600.00	149.369	172.767	111.856	−1179.491	36.547	−1283.152	−1220.467	−1045.195	90.992
	623.00	154.622	178.484	114.211	−1175.996	40.042	−1287.191	−1219.828	−1038.488	87.071
			0.900		0.561					
SOL−B	623.00	126.970	179.384	114.211	−1175.435	40.603	−1287.191	−1219.267	−1038.488	87.071
	683.00	137.815	191.550	120.471	−1167.491	48.547	−1298.320	−1218.836	−1021.093	78.091
			3.277		2.238					
SOL−C	683.00	137.815	194.827	120.471	−1165.253	50.785	−1298.320	−1216.598	−1021.093	78.091
	700.00	140.888	198.252	122.319	−1162.884	53.154	−1301.661	−1216.373	−1016.229	75.832
	800.00	158.963	218.245	133.063	−1147.892	68.146	−1322.488	−1214.115	−987.773	64.495
	900.00	177.038	238.012	143.627	−1131.092	84.946	−1345.303	−1210.239	−959.696	55.699
	993.00	193.847	256.234	153.321	−1113.846	102.192	−1368.286	−1205.158	−934.048	49.134
			45.085		44.769					
LIQ	993.00	185.435	301.319	153.321	−1069.077	146.961	−1368.286	−1160.389	−934.048	49.134
	1000.00	185.435	302.621	154.362	−1067.779	148.259	−1370.400	−1160.012	−932.454	48.706
	1100.00	185.435	320.295	168.656	−1049.235	166.803	−1401.560	−1154.692	−909.956	43.210
	1200.00	185.435	336.430	181.975	−1030.692	185.346	−1434.408	−1149.485	−887.938	38.651
	1300.00	185.435	351.273	194.434	−1012.148	203.890	−1468.803	−1144.357	−866.351	34.810
	1400.00	185.435	365.015	206.134	−993.605	222.433	−1504.626	−1139.294	−845.156	31.533
	1500.00	185.435	377.809	217.157	−975.061	240.977	−1541.774	−1134.287	−824.321	28.705
	1600.00	185.435	389.776	227.576	−956.518	259.520	−1580.160	−1129.327	−803.819	26.242
	1700.00	185.435	401.018	237.451	−937.974	278.064	−1619.705	−1414.819	−769.385	23.640
	1800.00	185.435	411.617	246.836	−919.431	296.607	−1660.342	−1408.434	−731.602	21.231
	1900.00	185.435	421.643	255.775	−900.887	315.151	−1702.010	−1402.100	−694.174	19.084
	2000.00	185.435	431.155	264.308	−882.344	333.694	−1744.654	−1395.816	−657.077	17.161

References

Phase	H / S	C_p
SOL−A	Ja1	Ja1
SOL−B	Ja1	Ja1
SOL−C	Ja1	Ja1
LIQ	Ja1	Ja1

LiCl

LITHIUM CHLORIDE

42.394

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	48.030	59.300	59.300	−408.266	0.000	−425.946	−408.266	−384.015	67.278
	300.00	48.094	59.597	59.301	−408.177	0.089	−426.056	−408.254	−383.864	66.837
	400.00	50.966	73.847	61.224	−403.217	5.049	−432.756	−407.642	−375.829	49.078
	500.00	53.350	85.480	64.947	−397.999	10.267	−440.739	−410.145	−367.630	38.406
	600.00	55.590	95.406	69.215	−392.551	15.715	−449.795	−409.492	−359.184	31.270
	700.00	57.776	104.140	73.593	−386.883	21.383	−459.781	−408.589	−350.867	26.182
	800.00	59.939	111.996	77.910	−380.997	27.269	−470.594	−407.458	−342.696	22.376
	883.00	61.725	118.000	81.400	−375.948	32.318	−480.142	−406.355	−336.031	19.878
			22.460		19.832					
LIQ	883.00	65.019	140.460	81.400	−356.116	52.150	−480.142	−406.355	−336.031	19.878
	900.00	64.858	141.698	82.527	−355.012	53.254	−482.540	−386.227	−335.062	19.446
	1000.00	63.911	148.483	88.790	−348.574	59.692	−497.056	−384.546	−329.468	17.210
	1100.00	62.963	154.529	94.497	−342.230	66.036	−512.212	−382.965	−324.037	15.387
	1200.00	62.016	159.967	99.730	−335.981	72.285	−527.942	−381.482	−318.747	13.875
	1300.00	61.069	164.894	104.556	−329.827	78.439	−544.189	−380.088	−313.576	12.600
	1400.00	60.122	169.385	109.029	−323.767	84.499	−560.906	−378.786	−308.509	11.511
	1500.00	59.174	173.501	113.191	−317.802	90.464	−578.053	−377.573	−303.532	10.570
	1600.00	58.227	177.289	117.081	−311.932	96.334	−595.595	−376.450	−298.633	9.749
	1700.00	57.280	180.791	120.727	−306.157	102.109	−613.501	−520.623	−286.681	8.809

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1		
LIQ	Ja1	Ja1	Ja2	NBPT= 1656. GAS (LiCl + Li2Cl2) / 1701. GAS (LiCl)

42.394

LITHIUM CHLORIDE (GAS) **LiCl**[g]

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	33.245	212.924	212.924	−195.719	0.000	−259.202	−195.719	−217.271	38.065
	300.00	33.280	213.130	212.925	−195.657	0.062	−259.597	−195.734	−217.405	37.854
	400.00	34.780	222.927	214.251	−192.249	3.470	−281.419	−196.674	−224.492	29.316
	500.00	35.706	230.795	216.798	−188.721	6.998	−304.118	−200.866	−231.009	24.133
	600.00	36.303	237.362	219.693	−185.118	10.601	−327.535	−202.059	−236.924	20.626
	700.00	36.713	242.990	222.629	−181.466	14.253	−351.559	−203.172	−242.646	18.106
	800.00	37.012	247.913	225.488	−177.779	17.940	−376.110	−204.240	−248.212	16.207
	900.00	37.242	252.286	228.228	−174.066	21.653	−401.124	−205.281	−253.645	14.721
	1000.00	37.425	256.220	230.833	−170.332	25.387	−426.552	−206.305	−258.964	13.527
	1100.00	37.578	259.794	233.306	−166.582	29.137	−452.356	−207.317	−264.181	12.545
	1200.00	37.709	263.070	235.652	−162.817	32.902	−478.501	−208.318	−269.306	11.723
	1300.00	37.824	266.093	237.879	−159.041	36.678	−504.961	−209.303	−274.349	11.023
	1400.00	37.927	268.900	239.996	−155.253	40.466	−531.713	−210.272	−279.316	10.421
	1500.00	38.021	271.520	242.011	−151.456	44.263	−558.735	−211.226	−284.214	9.897
	1600.00	38.109	273.976	243.933	−147.649	48.070	−586.011	−212.167	−289.049	9.436
	1700.00	38.192	276.289	245.769	−143.834	51.885	−613.526	−358.300	−286.705	8.809
	1800.00	38.270	278.474	247.525	−140.011	55.708	−641.265	−358.464	−282.489	8.198
	1900.00	38.345	280.546	249.209	−136.180	59.539	−669.217	−358.625	−278.264	7.650
	2000.00	38.417	282.514	250.826	−132.342	63.377	−697.370	−358.784	−274.030	7.157

References

Phase	H / S	C_p
GAS	Ja1	Ja1

Li2Cl2[g] DILITHIUM DICHLORIDE (GAS) 84.787

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	72.099	288.776	288.776	−598.546	0.000	−684.645	−598.546	−600.782	105.255
	300.00	72.230	289.223	288.778	−598.412	0.134	−685.179	−598.567	−600.796	104.608
	400.00	76.835	310.727	291.678	−590.927	7.619	−715.217	−599.776	−601.364	78.530
	500.00	78.981	328.129	297.285	−583.124	15.422	−747.188	−607.415	−600.970	62.783
	600.00	80.160	342.643	303.669	−575.162	23.384	−780.747	−609.043	−599.525	52.193
	700.00	80.883	355.058	310.145	−567.107	31.439	−815.647	−610.518	−597.820	44.610
	800.00	81.361	365.891	316.450	−558.993	39.553	−851.706	−611.914	−595.910	38.909
	900.00	81.699	375.495	322.487	−550.839	47.707	−888.785	−613.269	−593.828	34.465
	1000.00	81.948	384.116	328.227	−542.656	55.890	−926.773	−614.602	−591.596	30.902
	1100.00	82.140	391.936	333.668	−534.452	64.094	−965.581	−615.922	−589.232	27.980
	1200.00	82.292	399.090	338.826	−526.230	72.316	−1005.138	−617.232	−586.747	25.540
	1300.00	82.418	405.682	343.719	−517.994	80.552	−1045.381	−618.518	−584.155	23.472
	1400.00	82.523	411.794	348.366	−509.747	88.799	−1086.258	−619.784	−581.464	21.695
	1500.00	82.613	417.490	352.786	−501.490	97.056	−1127.726	−621.031	−578.683	20.152
	1600.00	82.692	422.825	356.999	−493.225	105.321	−1169.744	−622.260	−575.820	18.799
	1700.00	82.763	427.840	361.020	−484.952	113.594	−1212.280	−913.884	−558.639	17.165
	1800.00	82.826	432.572	364.865	−476.672	121.874	−1255.303	−913.579	−537.751	15.605
	1900.00	82.885	437.052	368.547	−468.387	130.159	−1298.786	−913.277	−516.880	14.210
	2000.00	82.938	441.305	372.080	−460.096	138.450	−1342.706	−912.979	−496.025	12.955

References

Phase	H / S	C_p
GAS	Ja1	Ja1

58.393

LITHIUM HYPOCHLORITE (GAS) LiClO[g]

Phase	T [K]	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f [–]
		[J / (K mol)]			[kJ / mol]					
GAS	298.15	42.972	256.438	256.438	–14.226	0.000	–90.683	–14.226	–18.169	3.183
	300.00	43.045	256.704	256.439	–14.146	0.080	–91.158	–14.251	–18.194	3.168
	400.00	46.978	269.640	258.176	–9.640	4.586	–117.496	–15.578	–19.308	2.521
	500.00	49.890	280.456	261.579	–4.788	9.438	–145.016	–19.975	–19.776	2.066
	600.00	51.864	289.738	265.518	0.306	14.532	–173.537	–21.256	–19.612	1.707
	700.00	53.232	297.842	269.569	5.565	19.791	–202.924	–22.390	–19.247	1.436
	800.00	54.214	305.017	273.560	10.940	25.166	–233.074	–23.439	–18.725	1.223
	900.00	54.942	311.447	277.419	16.399	30.625	–263.903	–24.436	–18.076	1.049
	1000.00	55.498	317.266	281.117	21.923	36.149	–295.343	–25.402	–17.317	0.905
	1100.00	55.932	322.576	284.648	27.495	41.721	–327.339	–26.346	–16.463	0.782
	1200.00	56.276	327.458	288.015	33.106	47.332	–359.844	–27.275	–15.523	0.676
	1300.00	56.553	331.974	291.225	38.748	52.974	–392.818	–28.186	–14.507	0.583
	1400.00	56.778	336.174	294.287	44.415	58.641	–426.228	–29.082	–13.421	0.501
	1500.00	56.961	340.098	297.212	50.102	64.328	–460.044	–29.967	–12.272	0.427
	1600.00	57.110	343.779	300.009	55.806	70.032	–494.240	–30.844	–11.063	0.361
	1700.00	57.230	347.245	302.686	61.523	75.749	–528.793	–176.921	–2.680	0.082
	1800.00	57.326	350.519	305.253	67.251	81.477	–563.682	–177.039	7.573	–0.220
	1900.00	57.400	353.620	307.718	72.988	87.214	–598.891	–177.164	17.833	–0.490
	2000.00	57.456	356.566	310.088	78.731	92.957	–634.401	–177.299	28.099	–0.734

References

Phase	H / S	C_p
GAS	Ja1	Ja1

LiClO4 LITHIUM PERCHLORATE 106.391

Phase	T [K]	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
		[J / (K mol)]			[kJ / mol]					[−]
SOL	298.15	105.049	125.520	125.520	−380.744	0.000	−418.168	−380.744	−253.907	44.484
	300.00	105.437	126.171	125.522	−380.549	0.195	−418.401	−380.735	−253.120	44.072
	400.00	129.704	159.931	129.956	−368.754	11.990	−432.727	−379.230	−210.754	27.522
	500.00	143.511	190.540	139.075	−355.011	25.733	−450.282	−379.325	−168.648	17.619
	509.00	144.374	193.108	140.008	−353.716	27.028	−452.008	−379.024	−164.859	16.918
			57.540		29.288					
LIQ	509.00	161.084	250.649	140.008	−324.428	56.316	−452.008	−349.736	−164.859	16.918
	600.00	161.084	277.144	158.853	−309.769	70.975	−476.056	−345.198	−132.191	11.508
	700.00	161.084	301.975	177.571	−293.661	87.083	−505.043	−340.364	−97.075	7.244
	800.00	161.084	323.485	194.495	−277.552	103.192	−536.340	−335.684	−62.640	4.090
	900.00	161.084	342.458	209.902	−261.444	119.300	−569.656	−331.141	−28.784	1.671
	1000.00	161.084	359.430	224.021	−245.336	135.408	−604.765	−326.714	4.573	−0.239
	1100.00	161.084	374.783	237.040	−229.227	151.517	−641.488	−322.386	37.491	−1.780
	1200.00	161.084	388.799	249.111	−213.119	167.625	−679.677	−318.142	70.020	−3.048
	1300.00	161.084	401.692	260.359	−197.010	183.734	−719.211	−313.960	102.196	−4.106
	1400.00	161.084	413.630	270.886	−180.902	199.842	−759.984	−309.835	134.053	−5.002
	1500.00	161.084	424.744	280.777	−164.794	215.950	−801.909	−305.761	165.617	−5.767

References

Phase	H / S	C_p
SOL	Ja1	Ja1
LIQ	Ja1	Ja1

25.939

LITHIUM FLUORIDE

LiF

Phase	T	C_p	S	$-(G-H298)/T$	H	H–H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[–]
SOL	298.15	41.919	35.660	35.660	−616.931	0.000	−627.563	−616.931	−588.661	103.131
	300.00	42.025	35.920	35.661	−616.853	0.078	−627.629	−616.928	−588.486	102.464
	400.00	46.343	48.654	37.368	−612.417	4.514	−631.878	−616.712	−579.036	75.614
	500.00	49.278	59.325	40.721	−607.629	9.302	−637.292	−619.541	−569.333	59.478
	600.00	51.668	68.526	44.606	−602.579	14.352	−643.694	−619.205	−559.319	48.693
	700.00	53.800	76.653	48.615	−597.304	19.627	−650.961	−618.632	−549.380	40.995
	800.00	55.795	83.969	52.584	−591.823	25.108	−658.998	−617.857	−539.537	35.228
	900.00	57.711	90.652	56.448	−586.147	30.784	−667.734	−616.896	−529.803	30.749
	1000.00	59.577	96.829	60.181	−580.283	36.648	−677.112	−615.759	−520.186	27.172
	1100.00	61.411	102.594	63.777	−574.233	42.698	−687.086	−614.448	−510.690	24.251
	1121.30	61.799	103.775	64.526	−572.921	44.010	−689.284	−614.146	−508.684	23.697
			24.157		27.087					
LIQ	1121.30	64.183	127.932	64.526	−545.834	71.097	−689.284	−587.059	−508.684	23.697
	1200.00	64.183	132.286	68.829	−540.783	76.148	−699.525	−585.745	−503.228	21.905
	1300.00	64.183	137.423	73.910	−534.364	82.567	−713.014	−584.075	−496.420	19.946
	1400.00	64.183	142.179	78.619	−527.946	88.985	−726.997	−582.404	−489.740	18.272
	1500.00	64.183	146.608	83.005	−521.528	95.403	−741.439	−580.732	−483.179	16.826
	1600.00	64.183	150.750	87.111	−515.110	101.821	−756.309	−579.058	−476.730	15.564
	1700.00	64.183	154.641	90.970	−508.691	108.240	−771.581	−722.587	−463.265	14.234
	1800.00	64.183	158.309	94.611	−502.273	114.658	−787.230	−720.157	−448.081	13.003
	1900.00	64.183	161.780	98.055	−495.855	121.076	−803.236	−717.734	−433.032	11.905
	2000.00	64.183	165.072	101.325	−489.437	127.494	−819.580	−715.316	−418.110	10.920

References

Phase	H / S	C_p	Remarks	
SOL	Ja1	Ja1	Ja1	MPT= 1121.3
LIQ	Ja1	Ja1	Ja1	NBPT= 1990. GAS (LiF + Li2F2 + Li3F3)

LiF[g] LITHIUM FLUORIDE (GAS) 25.939

Phase	T	C_p	S	−(G−H298)/T	H	H−H298	G	ΔH_f	ΔG_f	log K_f
	[K]	[J / (K mol)]			[kJ / mol]					[−]
GAS	298.15	31.299	200.272	200.272	−340.891	0.000	−400.602	−340.891	−361.700	63.368
	300.00	31.326	200.466	200.273	−340.833	0.058	−400.973	−340.908	−361.829	63.000
	400.00	32.943	209.699	201.520	−337.620	3.271	−421.499	−341.915	−368.657	48.142
	500.00	34.236	217.197	203.929	−334.257	6.634	−442.855	−346.169	−374.897	39.165
	600.00	35.138	223.524	206.681	−330.786	10.105	−464.900	−347.412	−380.524	33.128
	700.00	35.777	228.991	209.487	−327.238	13.653	−487.532	−348.566	−385.950	28.800
	800.00	36.246	233.800	212.231	−323.636	17.255	−510.676	−349.669	−391.215	25.544
	900.00	36.603	238.091	214.871	−319.993	20.898	−534.274	−350.742	−396.344	23.003
	1000.00	36.886	241.963	217.389	−316.318	24.573	−558.280	−351.794	−401.354	20.965
	1100.00	37.116	245.489	219.786	−312.617	28.274	−582.656	−352.832	−406.260	19.292
	1200.00	37.309	248.727	222.065	−308.896	31.995	−607.369	−353.859	−411.071	17.893
	1300.00	37.475	251.720	224.232	−305.156	35.735	−632.393	−354.867	−415.798	16.707
	1400.00	37.620	254.503	226.296	−301.402	39.489	−657.706	−355.860	−420.448	15.687
	1500.00	37.750	257.103	228.264	−297.633	43.258	−683.287	−356.837	−425.027	14.801
	1600.00	37.867	259.543	230.144	−293.852	47.039	−709.121	−357.800	−429.542	14.023
	1700.00	37.976	261.842	231.941	−290.060	50.831	−735.191	−503.956	−426.876	13.116
	1800.00	38.076	264.016	233.663	−286.257	54.634	−761.485	−504.141	−422.336	12.256
	1900.00	38.171	266.077	235.316	−282.445	58.446	−787.991	−504.324	−417.786	11.486
	2000.00	38.261	268.037	236.903	−278.623	62.268	−814.697	−504.502	−413.227	10.792
	2100.00	38.346	269.906	238.430	−274.793	66.098	−841.595	−504.678	−408.659	10.165
	2200.00	38.428	271.692	239.902	−270.954	69.937	−868.675	−504.851	−404.083	9.594
	2300.00	38.508	273.402	241.322	−267.107	73.784	−895.931	−505.021	−399.499	9.073
	2400.00	38.585	275.042	242.693	−263.252	77.639	−923.353	−505.188	−394.907	8.595
	2500.00	38.660	276.619	244.018	−259.390	81.501	−950.937	−505.353	−390.309	8.155

References

Phase	H / S	C_p
GAS	Ja1	Ja1

27 NOV 1990

Ihsan Barin

Thermochemical Data of Pure Substances

Almost 2400 pure substances, including 100 organic compounds, are considered in this compilation of thermochemical data. The scope of thermochemical functions presented is broad, ranging from heat capacity, entropy and Gibbs energy function to enthalpy of formation and equilibrium constant of formation.

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